Effect of Skin-to-Skin Contact between Mothers and Newborns at Birth on Temperature, Oxygen Saturation, and Initiation of Breast Feeding

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Abstract

Background: Immediately after birth, the newborn should be placed in Skin-to-Skin Contact (SSC) with their mothers for at least an hour, and mothers should be assisted to initiate breastfeeding their newborns within the first half-hour. **Objective** is to explore the effect of skin-to-skin contact between mothers and newborns at birth on temperature, oxygen saturation, and initiation of breast feeding. **Method:** A quasi-experimental design was utilized on the current study. **Sample and setting:** 300 mothers and their newborns were included as purposive sample in the delivery room at Minia University Hospital for Obstetrics and Pediatrics and Minia General Hospital. They divided randomly into two groups 150 for skin-to-skin contact (the study group) and 150 for the routine care (the control group). **Tools:** Data collection requires only one tool including four parts formed up a structured interview questionnaire: Part (1), assessed the personal and obstetric data of the mothers' Part (2) assessed the newborns data. Part (3) assessed the newborns auxiliary temperature, oxygen saturation, time of initiating breast feeding and duration of the first breast fed lastly Part (4) assessed the LATCH breastfeeding assessment tool.**Results:** There was increase in axillary temperature stability, increase oxygen saturation SO2 more than 90% among newborns after birth, decreasing mean time to initiate breast feeding and increasing mean duration of the first breast fed among the skin-to-skin contact group than the routine care group. **Conclusion**: early skin-to-skin contact immediately after newborns birth led to auxiliary temperature stabilization, increase oxygen saturation more than 90%, early successful initiation of breast feeding and increasing the duration of the first breastfed.**Recommendations**: Continuous educational and training program concerning benefits and practice of SSC among health personnel is necessary. All stable newborns born at term via normal delivery should practice skin-to-skin contact soon after birth for at least the first primary hours of life with continual observation of mothers and newborns during early SSC.

Keywords: Initiation of Breast Feeding, Mothers, Newborn, Oxygen Saturation, Skin to Skin Contact, Temperature

Introduction

Skin-to-skin contact (SSC) between newborns and their mothers immediately after birth is currently advised. The Baby Friendly Hospital Initiative Step 4 reads, "Facilitate immediate and uninterrupted skin-to-skin contact and support women to commence breastfeeding as soon as possible after birth," according to the recommendation of **WHO, 2018**. For mothers and infants, breastfeeding provides several benefits. Additionally, the mother's skin-to-skin contact with the newborn affect positively on the duration of breastfeeding at the first hour after birth **(Zakek, et al., 2018) and (Diez pasosen hospitals, 2019).** Additionally, SSC enhances the mother's views of her kid, her parenting abilities, and the physiological stability of the baby **(Moore, et al., 2012).**

The practice of SSC between the mother and the newborn at least during the primary hour after the delivery is advised by the World Health Organization (WHO). It is also known as kangaroo mother care (KMC), and it is a type of infant care that improves mother and child living conditions. In order to have skin-to-skin contact (SSC), WHO recommended that the infant must be placed on the mother's bare abdomen or chest as soon as possible, ideally within 10 minutes after delivery **(Dehghani, et al., 2015 and WHO, 2017).** SSC is believed to improve newborn outcomes by preserving the infant's body temperature and facilitating nursing care. All newborns are believed to benefit from these benefits. The

additional evidence strategy from KMC showed marked decrease among the neonatal morbidity and mortality rate **(Boundy et al., 2016 and Chan et al., 2017).**

Within an hour of birth, early start of breastfeeding (EIBF) could reduce infant mortality. However, many poor nations see an estimated 50% frequency of EIBF **(Takahashi, et al., 2017).** Early breastfeeding affects positively on its duration and decreased risk of neonatal mortality. It also increases the amount of milk produced Accompany with the production of antibodies to protect the newborn **(Safari*, et al.*, 2018).**

Newborns' body temperatures drop rapidly after birth due of their impaired ability to generate heat, but SSC helps to stabilize the newborns' body temperatures. When both mother and the newborn are in SSC, thermal energy is transferred from the mother to the infant. A newborn's sensory nerves are stimulated by the mother's body temperature, leading to a state of relaxation, decreased sympathetic nervous system tone, increased skin vessel dilation, and an increase in core body temperature. During the neonatal era, hypothermia is a leading cause of severe illness and, in the worst cases, fatality, especially in impoverished nations **(Horn et al., 2018).**

Countries with the highest neonatal mortality rates are also those where hypothermia is most widely acknowledged as a crucial intervention for newborn survival. One of the projects demonstrated that the average core temperature of newborns naturally falls from the time of birth to the time of bonding if no active warming is provided during that time. The risk of hypothermia could be mitigated by actively warming the skin's surface. Although other study found that neonates were not at risk for hypothermia **(Beiranvand, et al., 2014)**

Most babies spend the first two hours of their lives in a healthcare facility, which is the ideal time to conduct research's evaluating the impact of interventions on SO2 and heart rate, as they are the two biological parameters that could be monitored constantly. These disastrous occurrences may be preceded instability in these two factors. Several studies have demonstrated that direct skin contact raises blood oxygen levels. Also, improving mothers' ability to breastfeed, strengthens their nurturing and their behavior toward the children. In addition, this strategy led to efficient breastfeeding and quicker infant development **(Dehghani, et al., 2015).** Not all hospitals practice skin-to-skin contact with newborns, and the primary reasons for this are a lack of defined rules for skin-to-skin contact and a lack of education about the importance of early skin-to-skin contact **(Barbaglia, et al., 2019).** The purpose of this study was to assess the impact of immediate skin-to-skin contact between mothers and their newborns on core body temperature, oxygen saturation, and the start of breastfeeding.

Significance of the study

A normal delivery followed by at least one hour of skin-to-skin contact offers many benefits; including helping the baby maintain a healthy temperature and increasing the likelihood that they will breastfeed exclusively and for a longer time. The first 24 hours following birth are the most dangerous for both the newborn and the mother, with 2.9 million babies dying each year **(Bedaso, et al., 2019).**

In the UK, newborn death rates were estimated to be 1.74 per 1000 live births **(Manktelow, et al., 2015**). The two significant causes of neonatal mortality in Iraq are perinatal infections and neonatal hypoxia, both of which could be prevented by starting exclusive breastfeeding early. However, 38.1% of mothers in Iraq has a very low rate of early breastfeeding initiation **(Shaker, et al., 2016).** Within an hour of birth, early initiation of breastfeeding (EIBF) could reduce infant mortality rate. However, many developing countries have an estimated 50% frequency of EIBF **(Takahashi et al., 2017).**

The neonatal care given within the primary hour of a baby's life has a significant impact on their short- and long-term health **(Sharma, 2017).** The World Health Organization (WHO) recommends that mothers and their newborns engage in skin-to-skin contact (SSC) immediately following birth; nonetheless, many hospitals appear to routinely separate mothers and their newborns. Therefore, more studies on the application and practice of SSC are required to back up the

advantages of it following a normal birth **(Abdulghani, et al., 2018).**

Aim of the study

The aim of this study was to explore the effect of skin-to-skin contact between mothers and newborns at birth on temperature, oxygen saturation, and initiation of breast-feeding

Research hypotheses

H1: Newborns who perform skin-to-skin contact with their mothers may have maintaining stability of axillary temperature than others

H2: Newborns of skin-to-skin contact with their mothers may increase their oxygen saturation more than others.

H3: Mothers who perform skin to skin contact with their newborns may initiate breast feeding early than others.

Subjects and Method

Research Design: A quasi-experimental design was used in this research.

Sample and Setting: 300 mothers and their newborns were included as purposive sample that admitted in the delivery room and/or postpartum room at Minia University Hospital for Obstetrics and Pediatrics and Minia General Hospital. They divided randomly into two groups (150 for skin-to-skin contact group and 150 for routine care group). **Inclusion criteria:** mothers willing to join the study, have normal delivery, and have healthy full-term baby.

The sample size determination is based up on the following sample calculation formula: http://www.ifad.org/gender/tools/hfs/ anthropometry).

$$N = \frac{t^2 \times p(1-p)}{m^2}$$

$$N = \frac{(1.96)^2 \times 0.267\ (1-0.267)}{0.05^2} \quad N = 300$$

Description:

N= required sample size

t= confidence level at 95% (standard value of 1.960)

p= estimated prevalence of mothers and their newborns in Minia University Hospital for Obstetrics and Pediatrics and Minia General Hospital 2021 (0.26).

m = margin of error at 5% (standard value of 0.050)

Tools of data collection

The necessary information was gathered using the data collection tool. An interviewee questionnaire with four sections was developed based on revising the recent related literature.

First part: To assess the personal and the obstetric data of the mothers such as age, educational level, parity's number, and breast-feeding history.

Second part: To assess the newborn's data as sex, Apgar score on first minute and the weight at the birth.

Third part: To assess the newborn's body temperature (axillary temperature), oxygen saturation, time to initiate breast feeding, and duration of first breast fed.

Fourth part: The LATCH breastfeeding assessment tool **(adapted) from Lau, et al., (2016).** LATCH is a sensitive, accurate, and valid method for assessing breastfeeding methods based on observations and descriptions of successful breastfeeding. The letters in the acronym LATCH stand for five different assessment criteria: "L" stands for how well the baby latches onto the breast, "A" stands for how much swallowing can be heard, "T" stands for the mother's nipple types, "C" stands for the mother's level of comfort, and "H" stands for how much support the mother has received to hold her baby to the breast. There are three possible numerical scores for each parameter: 0, 1, and 2. Since the LATCH scale is a helpful tool for mother-infant pairs who may benefit from additional skilled support to initiate breastfeeding in particular subgroups at risk for non-exclusive breastfeeding at discharge, it was created to assess the success of breastfeeding in this study.

The LATCH breast feeding assessment scoring: The "L" assessment was given a score of "2" if a good latch was observed (flanged lips, tongue down, and a firm grip on the breast), "1" if repeated attempts to hold the nipple in the mouth or to stimulate sucking were observed, and "0" if a poor latch was observed (too sleepy, reluctant, or no latching was achieved). The "A" assessment was given a score of "2" for audible swallowing (spontaneous and intermittent twenty-four hours old or spontaneous and frequent > twenty-four hours old), "1" for a few unsuccessful swallows, and "0" for ineffective swallowing. After stimulation, the "T" assessment was given a score of "2" if the nipple was everted, "1" if it was flat, and "0" if it was inverted. The breast's "C" assessment was given a score of "2" if it was soft and tender, "1" if it was filled with blood or reddened, "0" if it had little blisters or damaged nipples, and "0" if it was engorged or showed signs of a crack. The 'H' assessment was given a score of "2" if proper positioning was achieved (staff not needed; mother able to position/hold baby); "1" if only minimal assistance was needed (e.g., raising the head of the bed or placing pillows for support); and "0" if full assistance was needed (staff holding the baby at the mother's breast). The total score range between zero and ten, with a higher score indicating more effective breastfeeding methods. Successful nursing is defined as a total score of more than seven, and unsuccessful breastfeeding is defined as a total score of less than seven **(Tornese, et al., 2012)**.

Validity and reliability

Pediatric nursing professionals confirmed the reliability of the tool that was submitted to them. Cronbach's alpha was used to statistically measure the tool's reliability. Tools' consistency and reliability were evaluated using the Cronbach's alpha method (= 0.880).

Ethical Considerations

After outlining the purpose and nature of the study, permission was granted by the director of the Obstetrics and Pediatrics Department at Minia University Hospital and the head of the delivery department at Minia General Hospital. After explaining the purpose, method, benefits, and nature of the study, written agreement was obtained from all mothers who participated in either the skin-to-skin contact or routine care groups. Participants were assured that their decision to opt out of the study would have no bearing on the quality of care they or their newborns received. Confidentiality of information was guaranteed, and data collected were used for study exclusively.

Pilot study

Before beginning data collection, a pilot study involving 10 percent of the total sample (30 mothers and their newborns) was conducted among the two groups (15 from the skin to skin contact and 15 from those in the routine care) to ensure that the final product is easy to understand and use, and to calculate how much time will be needed to fill it the data collection tool. No adjustments were made, so, mothers and their newborns included in the sample.

Field of the work

There was a total of eight months devoted to the research; from the beginning of January 2021 till the finishing of August 2021. Each mother's information was gathered twice weekly, once in the morning and once in the afternoon (ranging from 3-5 per day). Sixty minutes of direct skin-to-skin contact is recommended. Each new mother is monitored for a full 60 minutes after giving birth by the research team.

During admission, interviews with mothers who had been assigned to the skin-to-skin contact group at Minia University Hospital for Obstetrics and Pediatrics and Minia General Hospital and who met the study's inclusion criteria were undertaken. It should take approximately 15 minutes to do. Newborns were delivered by a doctor, given a quick towel dry, and given an Apgar score within the first minute of life. Next, the umbilical cord cut, and the baby's weight recorded.

After the umbilical cord was cut, the moms had skin-to-skin contact with their newborns. The baby dressed in a diaper or gown to avoid heat loss and their head is covered with a dry cap as soon as possible after delivery. They are placed in a prone posture attached with the mother's chest near the breast. The robe was used to support the infant, who was simply clothed in a diaper and a cap, between the mother's breasts. The skin-to-skin contact procedure took 60 minutes to complete. Researchers acquire finger pulse oximeter devices to attach to the infants' big toes and measure their oxygen saturation; they then

make sure the newborns' feet are nice and toasty, leave the devices on for as long as necessary to monitor oxygen saturation, and then remove them. All newborns in the usual care group also measure the temperature axillary and oxygen saturation also measured and recorded immediately after birth, during direct skin-to-skin contact, at 5, 15, and 30 minutes to check the newborn's parameters stability. Immediately following skin-to-skin contact, the researchers begin timing when breastfeeding begins. Baby's first round of breastfeeding was timed from the moment he or she began sucking till the moment he or she finished.

The study's author stood behind or next to the crib and crept closer to the baby when it was mouthing, sucking, latching, and sucking during feeding. The LATCH scale was also used to compare between the two groups' initial breastfeeds. A number of moms in each group sought additional assistance from the researcher in order to successfully breastfeed their infants, therefore this was measured alongside other LATCH scales (latch, audible swallowing, nipple type, comfort). There was continuous skin-to-skin contact for 60 minutes after the mother was moved to the postpartum room. The researchers accompany each new mother for the first 60 minutes after giving birth.

Mothers admitted to the delivery room at Minia University Hospital for Obstetrics and Pediatrics and Minia General Hospital were included in the study, the study's purpose and methods were communicated to them, and interviews were done with them while they were still in the hospital. It should take approximately about 15 minutes to do. Newborns are placed under radiant warmers after being delivered by a doctor, wrapped in a dry towel, and dried. As soon as the baby was born, we checked its Apgar score for the first minute. Next, the umbilical cord was cut, and the baby was clothed and weighed. After that, the average and individual readings of the newborn's axillary temperature and oxygen saturation using a pulse oximeter and recorded after 5, 15, and 30 minutes. The nurses in the delivery room gave the baby the standard care they needed and then helped the mothers to deliver. Women were urged to breastfeed their infants. Putting the newborn in a radiant warmer to sleep, it is a routine procedure that can be completed in a shorter time as feasible (30-40 min). Each group's first breastfeed was evaluated using the LATCH scale, and data related to when breastfeeding was initiated and how long it lasted after birth were documented using a stopwatch and minutes.

Statistical analysis

Descriptive statistics were used to create a tally table and exhibit the data, including a presentation of the frequency distribution, percentages, averages, and standard deviations. For statistical analysis, we chose a social science statistical package (SPSS/IBM, 20) because it includes the test of significance used in textbooks on the subject. Mean and standard deviation were used to describe the statistical distribution of the numbers. The qualitative information was presented as a frequency and percentage distribution. Independent samples t-test was utilized to evaluate the correlation or lack thereof between two quantitative variables. In order to compare the qualitative study variables, the Chi-square test was performed. The cutoff for statistical significance was set at a p value of 0.05.

Results

Table 1: The findings revealed that the mothers in the SSC and routine care groups had a mean age of (M ± SD) 27.70 ± 10.13 and 27.20 ± 9.85; respectively, 66.7% of mothers in SSC group can read and write, 23.3% have primary school, but 63.3% can read and write and 22% have primary school among mothers in the routine care group. In relation to (occupation) the housewives' mothers constituted 90% among SSC group, and 86.7% among the routine care group. Regarding to mothers' history of breast feeding the table demonstrated that there were 94% of mother in SSC group and 95.3% of them in the routine care group had experience of breast feed their children before.

Table 2: should that 58%, 60% of newborns in both the SSC and the routine care groups; respectively were females. While 66.7%, 63.3% of them in two groups had Apgar score 8 at the 1st minute after birth and most of them 83.3%, 81.3% had birth weight from 2.50 kg: <3.00 kg with mean ± SD was 2.9 ± 2 kg for the two groups respectively.

Table 3: revealed that the newborns who experienced SSC or routine care groups achieved successful breastfeeding (80% compared with

61.3%); respectively with no statistically significant difference.

Table 4: displayed moms in the SSC group had a significantly shorter time to initiate breastfeeding compared to mothers in the routine care group with (P. value <0.0001). Moms in the SSC group had a significantly longer average duration of the first breast feed than mothers in the routine care group with (P 0.0001). Also, there were highly statistically significant increases (within the normal range with P value equal 0.0001) in the mean axillary temperature of newborns among the SSC group compared to those in the routine care group.

Table 5: showed that oxygen saturation more than 90% of all newborns after 15 min from birth among newborn in the SSC group, but in those of routine care group were 61.3%, with highly statistically significant differences as P. value <0.0001. Concerning the newborn hypothermia, the table denoted that newborn in the SSC group had decreasing in hypothermia than those in the routine care group with highly statistically significance differences as P. value <0.0001.

Table (1): Characteristics of mothers in both the SSC and the routine care groups (n=300)

Personal data	SSC group (n = 150)		Routine care group (n = 150)	
	No.	%	No.	%
>20	8	5.3	7	4.7
20 : 30	120	80	116	77.3
≥ 30	22	14.7	27	18
Mean ± SD	27.70 ± 10.13		27.20 ± 9.85	
Mother's education level				
Read and write	100	66.7	95	63.3
Primary school	35	23.3	33	22
Secondary school	10	6,7	15	10
Academic education	5	3.3	7	4.7
Mother's occupation				
Housewives	135	90	130	86.7
Employee	15	10	20	13.3
History of breast feeding				
Yes	141	94	143	95.3
No	9	6	7	4.7

Table (2): Newborn's data among both groups (n=300)

Newborn data	SSC group (n = 150)		Routine care group (n = 150)	
	No.	%	No.	%
Gender				
Male	63	42	60	40
Female	87	58	90	60
Apgar score at the 1st minute				
7 score	12	8	12	8
8 score	100	66.7	95	63.3
9 score	38	25.3	43	28.7
Birth Weight / (kg)				
2.500: < 3000	125	83.3	122	81.3
3000: 3500	25	16.7	28	18.7
Mean ± SD	2.9 ± 2 kg			2.9 ± 2 kg

Table (3): Comparison between success of mothers to start breastfeeding among both groups n= 300

items	SSC group (n = 150)		Routine care group (n = 150)		Test of significance	
	n	%	N	%	X^2-test	*P*-value
Latch						
Too sleepy or reluctant, not latch obtained (0 score)	10	6.7	5	3.3	2.35	0.05*
Repeated attempts, must hold nipple in mouth, must stimulate to suck (1 score)	90	60	95	63.4		
Grasps breast, tongue down and forward, lips flanged, Rhythmic suckling (2 score)	50	33.3	50	33.3		
Audible swallowing						
None (0 score)	0	0.00	8	5.3	3.33	0.12
A few with stimulation (1 score)	40	26.7	89	59.4		
Spontaneous and intermittent (2 score)	110	73.3	53	35.3		
Type of nipple						
Inverted (0 score)	0	0.00	0	0.00	3.43	0.03*
Flat (1 score)	28	18.7	23	15.3		
Everett after stimulation (2score)	122	81.3	127	84.7		
Comfort						
Engorged, cracked, bleeding, large blister, severe discomfort. (0 score)	0	0.00	0	0.00	3.44	0.14
Filling, Reddened, small blister or bruises, mother complains, mild/moderate discomfort (1 score)	10	6.7	12	8		
Soft, non- tender, intact nipple (2 score)	140	93.3	138	92		
Hold						
Full assist (staffs holds the baby at breast (0 score)	16	10.7	23	15.3	2.25	0.35
Minimal assistant, Teach one side mother – does other staff holds and then mother take over (1 score)	110	73.3	99	66		
No assist from staff, mother able to position and hold the infant (2 score)	24	16	28	18.7		
Total score						
Successful breastfeeding (> 7 score)	120	80	92	61.3	3.54	0.15
Unsuccessful breastfeeding (< 7 score)	30	20	58	38.7		

*Statistically significant differences

Table (4): Comparison between mothers in both groups the mean time taken to initiate breastfeeding, the duration of the first breastfeed period and newborn temperature (n= 300)

items	SSC group (n = 150)	Routine care group (n = 150)	Test of significance	
	(Mean ± SD)	(Mean ± SD)	t- test	*P*-value
Time to initiate breastfeeding (by minutes)	1.5 ± 1. 5	40.5 ± 9.4	42.176	0.0001**
Duration of first breastfeed (by minutes)	12.9 ± 2.3	2.6 ± 6	33.285	0.0001**
Newborns temperature	37.33 ± 0.65	36.18 ± 0.99	24.288	0.0001**

**highly statistical significance differences

Table (5): Comparison between levels of oxygen saturation and presence of hypothermia among newborns in both groups (n= 300)

Newborn data	SSC group (n = 150)		Routine care group (n = 150)		Test of significance	
	No.	%	No.	%	X^2- test	*P*-value
Oxygen saturation after 5 min from birth of newborns						
SO2 <90 %	3	2	90	60	44.55	0.0001**
SO2 > 90 %	147	90	60	40		
Oxygen saturation after 15 min from birth of newborns						
SO2 <90 %	0	0.00	58	38.7	55.33	0.0001**
SO2 > 90 %	150	100	92	61.3		
Newborn hypothermia						
Yes	3	2	98	65.3	33.25	0.0001**
No	147	98	52	34.7		

**highly statistical significance differences

Discussion

There is wealth of evidence pointing to the benefits of skin-to-skin contact between mothers and their newborns immediately after birth. However, it is normal practice for hospitals to separate mothers and their newborns, and for the infants to be placed in cots or on warmers while their moms return to work. Very few studies recorded when SSC training began immediately following a healthy newborn birth, and even fewer described how long it continued **(Abdulghani, *et al.*, 2018)**

The first hour after delivered a full-term baby, it is the most important hour of anyone's life. The mother and the baby undergo numerous transformations throughout this time. As psychological and physiological levels alterations could take place on that time **(Zakšek, et al., 2018).** So, this study was conducted to explore the effect of skin-to-skin contact between mothers and newborns at birth on temperature, oxygen saturation, and initiation of breast-feeding

The current study revealed that, mean age of the mothers in the SSC and routine care groups was 27.70 ± 10.13 and 27.20 ± 9.85; respectively, about the majority of mothers in both the SSC and routine care groups can read and write, had primary school, non-employed and have a history of mother's breast feeding this findings were in direct contrast with of **Safari, et al., (2018)** who stated that, the same percentage of the mothers in two groups of the study can read and write, had primary school, non-employed and their demographic characteristics of mothers in the two groups were not significantly different, Also, **Bedaso, et al., (2019)** who demonstrated a correlation between mothers' perform SSC to their infants and their level of schooling. Since most of mothers are housewives, who can spend all their time with their newborns and feed them breast milk, mothers did not literate and prefer to apply SSC to their infants 18 times more than the employed mothers.

The present study findings indicated that the two groups have the majority numbers of female full terms babies, first-minute APGAR scoring was 8 score and two thirds of both groups, their birth weight ranged between 2.50 kg: <3.00 kg with mean ± SD was 2.9 ± 2 kg. This result was in the same line with the results of a study done by **Dehghani, et al. (2015),** who showed that, birth weight within the normal range, and the majority of newborns were female in both groups. Since newborns that perform skin-to-skin contact with their mothers are less likely to cry, more conceivable to stay warm and conserve energy while being examined. **Widstrom (2019)** in his study stated that it is possible to assess the Apgar score and any other necessary assessments on a healthy full-term newborn without disturbing the newborn, if skin-to-skin contact with their mothers continues uninterrupted.

The current study found significant statistical different between moms who engaged in skin-to-skin contact with their infants and those in the routine care group regarding time of starting breastfeeding with (P equal 0.0001). In a similar line, the average time before the first breastfeed for moms in the skin-to-skin contact group was significantly longer than for those in the routine care group. These findings were

consistent with the finding of study done by **Safari, et al. (2018),** who found that increased skin-to-skin contact between mothers and their newborns shortly after birth increased the rate at which breastfeeding was initiated and enhanced the breastfeeding practices of healthy full-term babies. While **Srivastava, et al., (2014)** in their study observed that the mother-infant skin to skin contact shortly after birth boosted the success rate and length of the first breast-fed and also similarly, **Redshaw, et al., (2014)** claimed that early contact between the mothers and their newborn appeared helpful, as mothers were more likely to begin breastfeeding if they held their baby within the first five minutes after birth.

Correspondingly, the average length of the first breast feeding session is about the same as the average length of time it takes to start breastfeeding. While **Safari et al. (2018)** reported that mothers in the skin-to-skin contact group had longer mean durations of first breast feeding than those in the routine care group. The current study demonstrated the opposite to be true. In this regard, although one of the World Health Organization's recommendations for breastfeeding was to begin within the first half hour after birth, it is undeniable that in most hospitals, mother-infant contact and breastfeeding are delayed due to update the technology of hospital policies and routine cares like to place the baby under a warmer in another section away from the mother room to decrease hypothermia **(Karimia, et al., 2019).**

Researchers recommend reducing the workload in the delivery area to allow women to continue SSC for longer than 60 minutes after birth, as most moms reported being quite satisfied and enjoying the experience. Within the first hour after birth, skin-to-skin contact is essential for promoting breastfeeding **(Karim, et al., 2019**). Skin-to-skin contact allow the first breastfeed to occur sooner, breastfeeding continues longer, and the likelihood of exclusive breastfeeding increases with better suckling and body temperature maintenance if skin-to-skin contact occurs within the first hour after delivery and lasts for at least an hour **(Bedaso, et al., 2019).**

The current study finding showed highly statistically significant differences between the newborns in the skin-to-skin contact (SSC) and routine care groups regarding their axillary temperatures, with an increasing mean that was within the normal range and the majority of newborns in the SSC group having no hypothermia while half of the newborns in the routine care group had hypothermia. This finding was parallel with **Moore et al., (2016)** who reported that SSC infants had high level of SCRIP, also with **Safari, *et al.*, (2018)** who discovered that close Postpartum hypothermia affected just 2% of babies who got SSC, as opposed to 50% of neonates who in the routine care group. In impoverished nations, hypothermia during the neonatal period is frequently cited as a key contributing factor to severe morbidity with the worst, fatality rate.

Findings of the present study indicated that Oxygen saturation was more than 90% among all newborns after 15 min from birth in SSC group compared with sixty one percent of those in the routine care group with highly statistically significant differences as P. value <0.0001. This current result was consistent with **Takahashi, et al., (2011**) who reported that infant SO2 levels were stable in SSC. Several studies have looked at the SO2 range of healthy, full-term babies, however they have only looked at the first few minutes of life. The levels of dissolved oxygen (SO2) in the blood of infants are low and rise slowly, although they don't usually reach the 90% threshold until after 5 minutes. During the first 15 minutes after giving birth, there is a noticeable gradient between the SO2 of pre-ductal oxygen (higher) and post-ductal oxygen. The time required to reach 90% SO2 varies significantly between babies born via caesarean section and babies born vaginally. Our knowledge is substantially more limited when it comes to the development of SO2 in term infants in SSC. For a SO2 > 90% to be reached, the average time is 7.9 minutes (IQR: 5.0-10.0). Two groups of neonates were compared for SO2 and HR development over the course of 30 minutes; in the first group, SSC was initiated within the first 5 minutes after delivery. In contrast the other group-initiated SSC after waiting at least 5 minutes. The early SSC starters stabilized their heart rates first (between 120 and 160 b/m), however there was no difference in their SO2 levels (with measurements between 92% and 96%) **(López, et al., 2019).**

Conclusion

The current study finding indicate that mothers who engage in early maternal/newborn skin-to-skin contact after birth are more likely to report early successful performance of breastfeeding and increase the duration of their first breastfed infant than mothers who do not engage in skin-to-skin contact. Early skin-to-skin contact after birth immediately to full-term newborns had a positive effect on stabilizing the newborns' body temperature, increasing oxygen saturation more than 90% after 15 min of all newborns in the skin-to-skin contact group compared with 61% of those in the routine care group.

Recommendations

All healthy newborns delivered vaginally at full term should have immediate skin-to-skin contact within the first hour of their lives, with mothers and newborns being continuously observed throughout early SSC. A training program in nursing simulation might aid in spreading adoption of SSC. It is essential to offer ongoing educational and training programmes on how to apply SSC for all mothers to all neonatology nurses.

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