

Infant and Young Child Feeding Practices in Infants Receiving Skin to Skin Care at Birth: Follow-up of Randomized Cohort

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ABSTRACT

Introduction: Skin to Skin Care (SSC) in neonatal period influences immediate breastfeeding outcomes in early childhood, especially the duration of exclusive breastfeeding.

Aim: We investigated influence of 17 hours of SSC given from day one of life on Infant and Young Child Feeding (IYCF) practices through one year of life.

Materials and Methods: Follow-up of a Superiority Randomized Control Trial (RCT) (CTRI/2013/06/003790) conducted in a teaching hospital located in central Gujarat. Mothers of 100 neonates (48 girls, 52 boys) from previous study cohort of RCT on SSC were followed. A survey on IYCF practices during the first year of life was administered after the end of infancy. In RCT, 50 neonates had received SSC beginning of 30 min- 1 hour after birth for average 17 hours on day 1 of life. In the control group, 50 newborn were placed next to the mother and conventional care was provided. There was a significant difference between hypothermia incidences in these groups in the first two days of life.

Results: There was no difference in the groups as far as the duration of exclusive breastfeeding, number of times breastfed per day, or stoppage of night feeds. No baby in either group received bottled feeds but about 53 received some form of extra lacteal feeds in the first 6 months without significant group difference. Fewer SSC mothers reported difficulties with breastfeeding or extra lacteal supplementation. All mothers who faced problems contacted physicians for advice and 20 were advised top milk and 6 given other foods. At one year of life 66% mothers were giving less than the recommended five food servings. There was no difference in practices related to hand washing, food preparation and storage, feeding habits of child and illness episodes in the children.

Conclusion: IYCF practices in this small group were not as per guidelines. Few positive trends were seen with fewer SSC mothers facing problems related to breastfeeding. The study was underpowered to detect differences in IYCF practices in relation to SSC.

Keywords: Breastfeeding, Infancy, Mortality, Skin to Skin contact

INTRODUCTION

The 2004 Lancet paper demarcated a few interventions which can have an impact on newborn mortality. Exclusive Breastfeeding and Skin to Skin Care (SSC) were among the interventions which are known to reduce neonatal mortality [1]. Reviews have demonstrated the evidence base and the benefit of each of these interventions on many factors that affect neonatal as well as child health [2].

SSC between mother and child also has an effect on breast milk production and duration of breastfeeding by the mother. The sensory stimulation through SSC via effects of warmth, touch and odour leads to vagal stimulation and release of oxytocin in the mother [3]. This hormonal release in the mother apart from reducing maternal stress also increases calmness and social responsiveness. There is a net result of increase in maternal confidence and increase in skin temperature of the breast giving comfort to the neonate [3,4]. Thus there is a profound relationship between SSC and breastfeeding. Most of the research related to SSC or kangaroo mother care has been focused on low birth weight and preterm babies and few studies have evaluated the benefits of SSC on neonates and child health. There may not be many benefits of SSC affecting mortality in term neonates, but there can be other benefits that may accrue to them. Increased duration of breastfeeding has been studied in term neonates that have been exposed to SSC. The studies have exposed them to fewer hours of early SSC.

There is an expected dose-effect relationship between the duration of SSC and duration of breastfeeding and/or breast milk output. However there is lack of data in this area. This paper describes the breastfeeding and infant feeding outcomes at one year of a randomized trial that looked at the influence of SSC given on the first day of life on neonatal hypothermia. These neonates were followed up a year later and assessed for their infant feeding practices.

MATERIALS AND METHODS

Hundred neonates were enrolled in a Superiority Randomized Control Trial (RCT/2013/06/003790) conducted from June 2012 to March 2013 to evaluate the effect of early SSC on neonatal hypothermia [5]. Term neonates more than 1800gm that were delivered vaginally were randomly enrolled for SSC for the first 24 hours of life or conventional care by the side of the mother. Fifty neonates that were randomized to the SSC group received mean Standard Deviation (SD) time of SSC of 16.98 hour (0.28) (range: 16.5 to 17.5 h) during the first 24 hour. These neonates were followed up after one completed year and a questionnaire was administered to the parents. We collected data related to infant and child feeding practices by means of validated instrument previously used at our institute. The investigator administering the questionnaire was not aware of the randomization status of the infant. The detailed questionnaire is provided in a table in results. For the statistical analysis Chi-Square test was used for comparison of categorical variables.

RESULTS

A total of 100 neonates (48 girls, 52 boys) from the previous study cohort were followed. The groups were comparable as seen in [Table/Fig-1] for socio-demographic and clinical profiles. Detailed results are presented in [Table/Fig-2]. Most of the mothers were housewives (96%), literate (84%), received antenatal care (87%) and had at least one elder child (60%). The mean (SD) gestational age of the babies was 37.73(1.35) weeks whereas mean (SD) birth weight of the babies was 2605.56(419.76) gm. Most of the babies were appropriate for the gestational age (77%). The temperature and heart rate at 30 minutes after birth was in normal range. Albeit

87% mothers reported to receive antenatal care, 45% were found to be low birth weight babies. The baseline characteristics were similar across both the groups.

More than 60% of the mothers could not start breast feeding within one hour of birth with no difference between the groups. Almost half of the mothers either terminated exclusive breastfeeding or continued it beyond the recommended cut off of 6 months. More

Particulars	SSC Group n=50	Control Group n=50
Occupation of mother	Frequency (%)	Frequency (%)
Housewife	50(100)	46(92)
Education		
Illiterate	8(16)	8(16)
Up to primary	18(36)	17(34)
More than primary	24(48)	25(50)
Antenatal care (yes)	42(84)	45(90)
Elder children		
0	22(44)	18(36)
1	18(36)	19(38)
>=2	10(20)	13(26)
Low Birth Weight	22(44)	23(46)
AGA	40(80)	37(74)
	Mean(SD)	Mean(SD)
Gestational age in weeks	37.8(1.43)	37.7(1.28)
Birth weight (gm)	2622.2(398.69)	2588.9(443.25)
Heart rate (30 min after birth)	138.9(6.58)	142.9(7.47)
Temperature (30 min after birth)	36.89(0.24)	36.87(0.26)

[Table/Fig-1]: Socio-demographic and clinical profile of the study population.

Particulars		SSC Group n=50	Control Group n=50	p-value
After delivery when did you start Breastfeeding?	Within 1 hour	38 %	36 %	0.8
	From 1 day	62%	64%	
How long did you give exclusive breastfeeding?	Still continued	10%	10%	0.94
	Less than 6 months	2%	2%	
	6 months to 1 Year	50%	56%	
	More than 1 year	38%	32%	
How many times do you breast feed in one day?	<6 times	16%	6%	0.21
	6-8 times	24%	34%	
	>8 times	60%	60%	
How long did you give breast feeding?	6-12 months	48%	40%	0.42
	1-2 year	52%	60%	
Did you give your baby other supplement in initial 6 months?	Yes	46%	60%	0.16
Did you face problems while breast feeding in first 6 months?	Yes	26%	40%	0.14
What was the number of times the child was given complementary feed yesterday?	<3 times	24%	16%	0.61
	3-5 times	44%	48%	
	>5 times	32%	36%	
When do you wash hands?	Always before cooking and feeding the child	88%	88%	0.58
	Sometimes before cooking and feeding the child	0%	2%	
	Rarely	12%	10%	

When do you wash your child's hand?	Before eating always	76%	60%	0.22
	Before eating sometimes	22%	38%	
	Rarely	2%	2%	
Do you use soap to wash yours and your infant's hand?	Before eating always	24%	38%	0.29
	Before eating sometimes	72%	60%	
	Rarely	4%	2%	
What food do you often give the child?	Freshly prepared	48%	44%	0.92
	Stored but within 30 minutes	50%	54%	
	Stored for more than 30 minutes	2%	2%	
How do you store the cooked food?	Kept open	4%	2%	0.74
	Kept covered at room temperature	58%	64%	
	Kept in hot case or refrigerator	38%	34%	
How much time is spent daily on feeding the child?	<1 Hour	20%	16%	0.95
	>1 Hour	54%	54%	
	1-2 Hour	24%	28%	
	2-3 Hour	2%	2%	
Do you rewarm when feeding the stored food?	Always	34%	40%	0.82
	Sometimes	36%	32%	
	Rarely	30%	28%	
How often do you wash the utensils used to feed the child?	After each feed	98%	98%	0.75
	Sometimes	2%	2%	
Do you teach your child about the food when they eat?	Yes	98%	98%	1.0
	No	2%	2%	
Do you allow your child to feed himself/herself?	Yes	94%	92%	1.0
	No	6%	8%	
Did you have family support during breastfeeding?	Yes	6%	8%	1.0
	No	94%	92%	
How many times your baby had diarrhea that required some treatment in last one year?	0	36%	30%	0.81
	Once	62%	68%	
	Twice	2%	2%	
How many times your baby got admitted in hospitals in last year?	0	36%	28%	0.62
	Once	62%	68%	
	Twice	2%	4%	
How many times your baby had cough and cold in last year?	0	36%	30%	0.92
	Once	62%	68%	
	Twice	2%	2%	
If you breastfeed your child, when did you stopped giving night feeds?	Before 6 months	2%	0%	0.43
	1 year -2 years	44%	34%	
	More than 2 years	48%	62%	
	Still night feeding	6%	4%	
After delivery when did your menstrual cycle start? (Months)	3 months to less than 4 months	2%	6%	0.38
	4 months to less than 5 months	58%	42%	
	5 months to less than 6 months	38%	50%	
	6 months to less than 7 months	2%	2%	

[Table/Fig-2]: Comparison of Infant and young child feeding practices and health outcome.

mothers in the control group (60% vs 46%) provided supplementary food whereas fewer mothers in the SSC group (26% vs 40%) reported problems with breastfeeding in first 6 months but the

differences were not statistically significant. All mothers who faced problems contacted physicians for advice, and 20 were advised top milk and 6 given other foods. No baby in either group received bottled feeding but about 53 received some form of extra lacteal feeds in the first 6 months without significant group difference. There was no statistically significant difference between the groups as far as the duration of exclusive breastfeeding, frequency of breastfeeding or discontinuation of night feeds. At one year of life, 66% mothers were giving less than the recommended five food servings [Table/Fig-2].

The general hygiene and hand washing practices were fair but quality of hand washing (with soap and water) was poor. Almost two third of the children had at least one episode of diarrhoea and hospitalization. There was no statistically significant difference in practices related to hand washing, food preparation and storage, feeding habits of child and illness episodes in the children between the two groups.

DISCUSSION

The results of our randomized cohort of infants do not show a difference between our groups. However, earlier various studies have shown that SSC does improve breastfeeding outcomes. Our survey does show interesting indicators of infant and child feeding which are on the lower side. These are not observed indicators but based on a survey done one year after the intervention and hence has the limitation of recall bias. The recall will be truer for those events that have occurred immediately following the delivery of the newborn. The current study was powered to detect a difference in neonatal hypothermia and hence we need to interpret with caution the absence of a difference between the groups related to Infant and Young Child Feeding (IYCF) practices. Exclusive breastfeeding for first six months and breast feeding till at least one year are very important IYCF indicators. Most child health organizations and government agencies would want these two indicators to be more than 90%. Assuming a modest improvement in these indicators from 50% to 70% as clinically important and possible by SSC, the power of the current study is 53%. A sample of size 224 (112 per group, considering a drop-out of 20%) and a longer intervention of SSC will enable us to explore effect of SSC on these two important IYCF indicators in a much better way.

A national survey in Taiwan conducted at two time points showed that, an increase in the number of mothers giving SSC led to an increase in the number of mothers giving breastfeeding during hospitalization (an increase of 50%) and at six months post-partum (an increase of 150%) [6]. However this large survey of more than 12000 mothers did not record the duration of SSC. A recent study from Haryana, India which randomized 289 neonates which was powered to detect an increase in breastfeeding in response to at least two hours of SSC showed significantly higher rates at six weeks in those neonates who had received SSC. This study has however not reported the actual duration of SSC that was given [7] while our intervention group had an average exposure of 17hour [5]. Another randomized control trial from Iran in which the intervention was 2 hours of early SSC reported similar outcomes on maternal breastfeeding efficacy at 28 days [8]. A similar RCT conducted in Pakistan showed exclusive breastfeeding at significantly higher levels (85.3%) in the SSC care group that received an average of 60 minutes of SSC vis-a-vis those that did not receive SSC (65.7%) [9]. Records of women who delivered normally in Japan at a single center over a period of 10 months were analysed for exclusive breastfeeding rates at one month. Those mothers who gave early SSC for at least 90 minutes (272) had significantly higher breastfeeding rates than those who didn't give any SSC (59.6%, 162/272 vs 45.8%, 60/131; crude OR 1.74, 95% CI 1.1 – 2.7, p < 0.009) [10].

Studies have shown that earlier initiation of SSC and higher dose of SSC in low birth weight and/or preterm infants do improve exclusive

breastfeeding rates at various time points of infancy [11-14]. An elegant study looking at exclusivity of breastfeeding at hospital discharge in a large cohort of neonates showed a dose response relationship between breastfeeding and time of SSC [15]. Whether the influence of this short duration of SSC lasts till the middle of infancy needs to be explored. The current study did not show a difference in the groups in spite of a higher number of hours of SSC. In a study that used neonatal hypothermia as primary outcome for SSC (similar to ours), there was no difference in exclusive breastfeeding rates at one month [16]. A randomized control trial with a small sample size to test breastfeeding outcomes at one month did not show a difference [17]. A well designed and adequately powered randomized control trial to detect breastfeeding outcomes at four months did not show a beneficial effect of a minimum 45 min of early SSC [18]. However being conducted in the UK, it was an expected outcome by the investigators; as they felt that returning to work, too tiring process, difficulties with attachment, social and domestic reasons may be factors that influence the breastfeeding outcomes at four to six months.

These conflicting results lead us to speculate studies that are designed to test breastfeeding outcomes that have shown beneficial outcomes during infancy may be stressing more on the importance of breast milk which may lead to poor blinding of the intervention. Hence, studies that are multicentric, randomized with larger sample sizes and having assessors blinded to the intervention are required to give more robust and replicable results.

Other infant and child feeding practices related to hand washing, preparation and feeding of food did not vary between the groups. SSC at birth is not expected to influence these behaviours as they will require behaviour change communication practices to be used.

CONCLUSION

Our current study does show that a prolonged SSC of up to 17 hour on day 1 of life is unlikely to influence breastfeeding practices in infancy. IYCF practices in this small group were not as per guidelines. Few positive trends were seen with fewer SSC mothers facing problems related to breastfeeding. Adequately designed studies will be needed to verify the dose of SSC required in terms of early contact and duration that will definitely influence feeding behaviors. Based on the literature available it is indeed a valid argument that SSC can influence duration of exclusive breastfeeding. The question that needs answering is how early and how much.

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