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Original Research Article

Increase in number of healthy newborns breastfed within one hour of life after using quality improvement cycle at tertiary care centre in Goa

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ABSTRACT

Background: It was evident from WHO Global Survey that, only 39.7% of newborns delivered via caesarean section were breastfed within 1 hour of life. By initiating breastfeeding within one hour of birth, over one million neonates can be saved each year globally. This study was conducted to analyse the retrospective secondary data to understand the reasons for delay in initiation of breastfeeding and to inculcate the methods used in quality improvement cycles for increasing the newborn babies breastfed within one hour of life.
Methods: Our study was retrospective secondary data analysis. Data of 3 months was analysed and reasons of delayed breast feeding was analysed and how use of PDCA cycles to increase the breast feeding was analysed.
Results: Our study showed that by using quality improvement tools, there was increase in the newborns breast fed within one hour of life from 73.75% to 94.95%.
Conclusions: To improve the rates of breastfeeding within one hour of life, quality improvement cycles need to be constantly carried out and any hindrances should be tackled timely so as to ensure good neonatal outcomes.

Keywords: Breast feeding, LaQshya, PDCA, Quality improvement cycles

INTRODUCTION

Of the total under-five mortality rate, neonatal mortality is nearly half.[1] Best part is that breast milk is readily available, affordable and most effective. As per NFHS-4 and NFHS-3, the percentage of neonates breast fed within 1 hour of life were 41.6% and 23.4% respectively in India.[1] As compared to infants who are breast fed within 1 hour of life, infants breastfed between 2 to 23 hours of life have the risk of neonatal death of 33% and the risk doubles for those infants breast fed after 1 day or more of birth.[2,3] To improve the neonatal survival and long term outcome, breastfeeding has to be initiated as soon as possible after birth of the neonate.[4,5] It is recommended by WHO and the United Nations Children's Fund (UNICEF) to initiate breastfeeding within 1 hour of life. According to WHO, Breastfeeding within first hour of birth is early initiation of breastfeeding which is infants' health indicator.[6-8] There were various barriers in initiation and duration of breastfeeding in several countries which consisted of maternal age, her education status, milk inadequately produced, breastfeeding difficulties like cracked nipple, inverted nipple etc also delivery by caesarean section, no counselling in regards to breastfeeding initiation and rooming in.[9] It was observed that babies born by caesarean section were 4 times less commonly breastfed within 1 hour of life.[10] It was evident from WHO Global Survey that, only 39.7% of newborns delivered via caesarean section were breastfed within 1 hour of life. By initiating breastfeeding within one hour of birth, over one million neonates can be saved each year globally.[11] As we are heading towards higher rates of institutional deliveries in India, health care facilities have to be geared up for providing optimal newborn care and inculcating early initiation of breastfeeding. Thus, it's crucial to incorporate quality improvement (QI) processes in health care

facilities to provide best neonatal care which is essential for the better health and survival of the neonates.

As a part of LaQshya program for quality improvement, quality improvement cycles were carried out to improve the rate of neonate being breast fed within 1 hour of life. The same data was used in our study.

Aim

To see outcome of quality improvement cycles on the number of newborn babies [who were term and preterm (≥34 weeks) and are stable] breastfed within one hour of life in department of obstetrics and gynecology, Goa Medical College.

Objectives

To study the retrospective secondary data to understand the reasons for delay in initiation of breastfeeding and to inculcate the methods used in quality improvement cycles for increasing the newborn babies breastfed within one hour of life.

METHODS

The following methodology was used in the current study. Our study was a retrospective secondary data analysis of data of 3 months from January 2024 to March 2024 which was collected for LaQshya Program in the department of obstetrics and gynecology in Goa Medical College, Bambolim Goa.

Data of all live babies with gestational age ≥34 weeks was included in the study. Exclusion criteria were for data of babies born to a mother with active untreated TB mother or on category C drugs, data of preterm babies who are less than 34 weeks gestational age, data of babies whose mothers were critical requiring ICU care, data of babies born with galactosemia, data of babies who were having cardiorespiratory instability or encephalopathy, data of babies born with life-threatening congenital malformations.

During the study period, there were mothers with co-morbidities like pre-eclampsia, gestational diabetes mellitus, obesity, systemic lupus erythematosus, elderly pregnant women (>35 years), post-partum hemorrhage, retained placenta. All this mothers with co-morbidities were included in the study. Data of mothers who had post-partum hemorrhage were also included in our study. Data for which all patient identifiers are removed was taken for analysis. The study was undertaken after taking institutional ethical clearance.

Statistical analysis

Chi Square was used to calculate the statistical significance. P value <0.5 was considered as statistically significant. The model for improvement as promoted by the institute for healthcare improvement was followed during quality improvement (QI) cycle. The QI team was made up of faculty members from the department of obstetrics and gynaecology, nurse in charge of labor room and maternity operation theatre, baby nurse, paediatric consultant and staff nurses from the labor room and maternity operation theatre and postnatal wards.

Widely the steps were following: (1) To measure the baseline rate of initiation of breastfeeding within one hour of life in normal vaginal deliveries and caesarean sections. (2) Constituting a team of obstetricians, paediatricians and staff nurses. (3) Finding out the various reasons of non-initiation of breastfeeding within 1 hour of life by drawing fish bone diagram. (4) Performing a series of PDCA cycles to see effect of change ideas which are generated by the team.

The PDCA (plan do check act) were applied and monitored on regular basis by the QI team. Team leader- LaQshya nodal officer, 2 obstetricians, 1 neonatologist and 4 nurses formed a team which met twice a month to discuss any new ideas or any hindrances in carrying out the methods of early initiation of breast feeding. Also during the daily rounds by consultants and the ward incharges the practices which were inculcated to reinforce the early initiation of breastfeeding were monitored and supervised. Monthly progress of this objective was assessed. The data was entered in the registers on daily basis. Data were entered in Microsoft Excel and analysed.

PDCA cycle I

The key issue was lack of knowledge among the health care professionals about the initiation of breastfeeding early within 1 hour of life. During LaQshya monthly meeting, staff and doctors were made aware about the importance of early breast feeding. The benefits of early initiation of breast feeding were discussed by small group discussion in labor room and in maternity OT. Also, it was ensured that staff and doctors are aware of National policy of early initiation of breast feeding in both normal vaginal delivery and caesarean section which has to be practiced. The circulation of staff assigned to maternity OT and labor room was one of the reasons for lack of knowledge. Hence labor room and maternity OT staff were not circulated among general pool of staff. Continuity of care was ensured by daily rounds by LR and OT incharge and any issues were settled.

PDCA II

The time of initiation of breast feeding was mandatorily entered in the labor room register and maternity OT register. Daily check of documentation whether breastfeeding was initiated within an hour or delayed was done by ward and OT in charge and consultant doctors on daily rounds. In cases where breastfeeding was not initiated within 1 hour of life, reason for the same was documented in the registers. The reasons were analysed.

PDCA III

It was noticed that babies born by caesarean section were more frequently not breastfed within 1 hour of life. Main reason for the same was unavailability of staff to take care of the newborn in OT. Hence baby sister was posted in maternity OT to provide care to the newborn and also ensure initiation of breast feeding within 1 hour of life. Baby sisters were posted in shift wise duties. Baby sister ensured the correct position and attachment during breastfeeding. Any help mother needed was provided by the baby sisters. Baby sisters-maintained registers in OT timings of initiation of breastfeeding.

RESULTS

During our study period there were 1135 live births. 958 newborns were breastfed within one hour of life.

Table 1: Age distribution of mothers included in the study.

Age groups of pregnant women (years)	Number of pregnant women	Percentage
<30	195	17.18
31-35	569	50.13
36-40	256	22.56
>41	115	10.13
Total	1135	100

As seen in Table 1, majority of pregnant women belonged to age group between 31 to 35 years that is 569 (50.13%) followed by 256 (22.56%) women belonged to age group 36 to 40 years and 198 (17.18%) and 115 (10.13%) pregnant women belonged to age groups <30 years and >41 years respectively.

Table 2: Month wise number of live births and number of newborns breastfed within one hour of life.

Months	Total number of live births	Number of newborns breastfed within one hour of life	Percentage
January	381	281	73.75
February	358	301	84.08
March	396	376	94.95
Total	1135	958	84.41

Table 3: Mothers with co-morbidities and percentage of newborns breastfed within one hour of life.

Co-morbidities in pregnant women	Number of newborns (%)	Number of newborns breast fed within one hour of life (%)
Pre-eclampsia	16 (1.4)	12 (75)
Gestational diabetes mellitus	20 (1.76)	18 (90)
Obesity	3 (0.26)	3 (100)
Elderly pregnant women (age >35 years)	4 (0.35)	4 (100)
Thyroid disorder	6 (0.52)	6 (100)
Post partum hemorrhage	2 (0.18)	1 (50)
Retained placenta	1 (0.09)	0 (0)
Systemic lupus erythematosus	2 (0.18)	2 (100)
Total	54 (4.76)	46 (85.19)

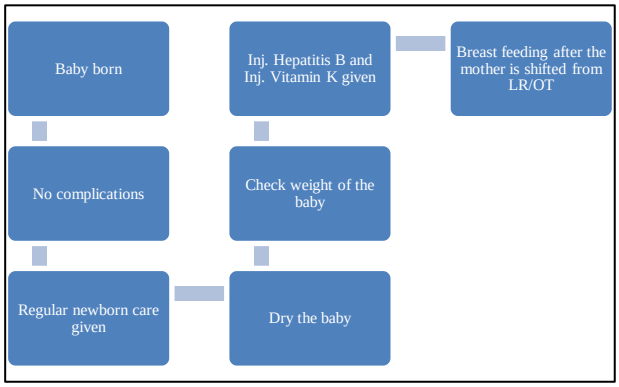

Figure 1: Baseline process mapping before after delivery of baby to the initiation of breast feeding.

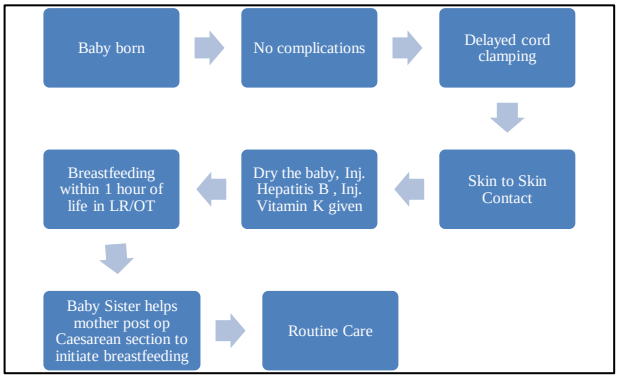

Figure 2: Changes in processes after inculcation of new process.

As seen in Table 2, in the month of January there were 381 live births out of which 281 (73.75%) newborns were breastfed within 1 hour of life. However, in the months of February and March, the number of newborns breastfed within one hour of life increased to 301 (84.08%) and 376 (94.95%) respectively.

Process mapping was done of all the steps and a fishbone diagram was drawn to highlight the probable root causes of delay in initiation of breast feeding (Figures 1-3).

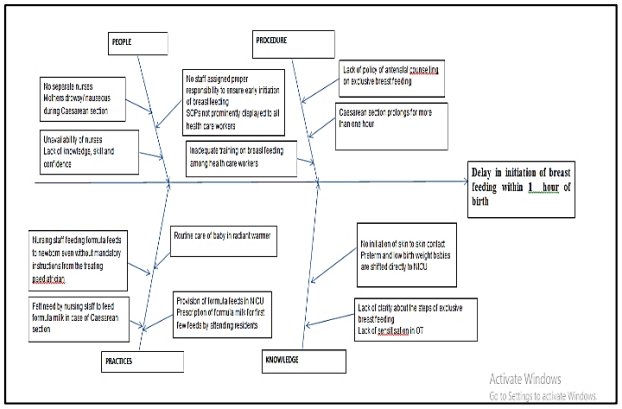

Figure 3: Fish bone diagram showing the causes of delay in initiation of breast feeding within 1 hour of life.

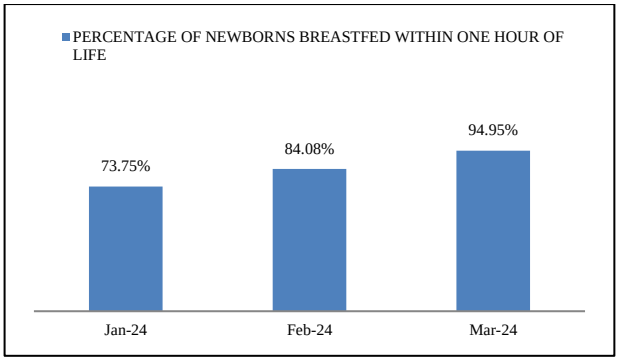

Figure 4: Percentage of newborns breastfed within 1 hour of life.

As seen in Table 3, out of 54 newborns born to pregnant women with co-morbidities, 46 (85.19%) newborns were breastfed within one hour of life. Those babies who were not breastfed within one of life were born in January which was the first month of implementation of quality improvement tool. During February and March, 100% newborns were breastfed among mothers with co-morbidities.

The increase in the number of newborns being breastfed within one hour of life was analysed and the chi square value obtained was 7.6035. The p value was 0.022331. The result was found to be significant at $p<0.05$.

Table 4: Plan do check act.

PDCA	Plan	Do	Check	Act
1	To check the feasibility of initiating breastfeeding early	Spreading awareness among the doctors and nurses of LR and OT about the importance of early initiation of breastfeeding. Avoiding circulation of LR and OT staff with the general pool of sisters	73.75% compliance	Maintain regular discussions with the nurses. Sensitising the mothers about the importance of early initiation of breast feeding
2	Check the rate of newborns breast fed	Registers maintained to document the number of newborns breastfed within 1 hour of life and checked by ward in charge, OT in charge and consultant on rounds	84.08% compliance	Check the reasons for delay in initiation of breastfeeding. Nursing students to be involved to sensitise the mothers about breast feeding through posters and pamphlets
3	Check the time of initiation of breastfeeding	Baby was put on mother's abdomen in LR immediately after delivery and breastfeeding initiated In OT, baby sister helped the mother to breast feed the newborn.	94.95% compliance	The new process mapping was inculcated in the departmental standard operating procedures (SOPs) and baby sisters maintained strict record of newborns breastfed in OT. Mothers sensitized about breast feeding

DISCUSSION

By use of PDCA cycles we have demonstrated a increase in the rate of newborns being breastfed within one hour of life. By understanding the importance of breastfeeding via group discussions, staff and doctors accepted the practice of initiating the breastfeeding early.

Cohort analysis from 3 large trials in India, Ghana and Tanzania revealed the risk of neonatal death to be 41% and

79% more among children who were initiated breastfeeding between 2-23 hours and 24-96 hours post birth in comparison to infants who were started breastfeeding within the one hour of life.[1] The neonatal mortality rate doubles if breastfeeding is initiated after 1 hour of life.[3,6]

Hence, with the knowledge of advantages of initiating breastfeeding within one hour of life, team approach with easy measures and quality improvement cycles can help us to achieve reduction in neonatal morbidity and mortality.[7]

Results as obtained in our study are similar to studies done by Devi et al and Dudeja et al.[1,8] The newborns who are not breast fed within 1 hour of life in our study were born to mothers who had complications in labor room and those whose caesarean sections took more than 1 hour to get over. This is noticed in our study as Goa Medical College is a tertiary care centre which is referral centre for all the peripheral government and private hospitals.

As a part of going towards LaQshya accreditation, carrying out this quality improvement cycles have helped us in framing the new ideas as departmental SOPs.

We analysed the root cause and worked towards improving them. Similar studies are reported in past but the root causes vary in them.[7-12]

Limitations of the study were that the study was done over data of short period of time however we could see the desired result of quality improvement cycle.

CONCLUSION

To sustain the improvement achieved same measures of counselling pregnant mothers, spreading knowledge about the importance of initiating breastfeeding within 1 hour of life, documentation on registers, daily check by OT, ward incharge and consultants and very importantly timely identifying and rectifying any emerging hindrance is very essential. All this will help in improving neonatal outcome.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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