

ORIGINAL ARTICLE

A Point of Care Quality Improvement Initiative for Enhancing Immediate Drying of Babies and Prevention of Hypothermia in Labor Room, Nishtar Medical University, Multan Pakistan

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ABSTRACT

Objective: To find out the current status of prevention of neonatal hypothermia by firstly, initialization of immediate drying and skin to skin contact of all newborns delivered by spontaneous vaginal delivery, and secondly, to initiate early breast feeding.

Methodology: This was an observational study carried out in labor room of Gyne Unit 1, Nishtar Medical University (NMU) and Hospital, Multan Pakistan from April to September 2019. Based on "Point of Care Quality Improvement (POCQI)" guidelines, Initially, data were collected for 4 weeks during morning shift (phase 1) utilizing 2 indicators i-e immediate drying and number of babies who developed hypothermia within one hour of birth. Data were analyzed; results interpreted, and necessary modifications made. After implementation of changes further data was collected for 24 hours shift of gyne unit 1 for the rest of study period including additional indicators i.e., initiation of early breastfeeding and skin to skin contact.

Results: A total of 744 babies delivered over a period of six months during this initiative, which was carried out in 2 phases, the phase-1 comprised of four weeks and included study of 24 babies and the phase 2 included 720 babies over five months. During phase-1, all 24 (100%) newborns were dried immediately after birth and the temperature was recorded among 20 (83.3%) of the babies with lost to follow up of 4 (16.7%) babies due to shifting to NICU for intensive care. During the second phase, among 720 babies that were delivered, 590 (81.9%) received skin-to-skin care for minimum of half hour due to rapid turnover of patients for delivery in labor room. Breastfeeding was initiated within one hour after birth in 593 babies (82.3%). Temperature was recorded among 528 (73.3%) babies with 37 (5.1%) shifted to NICU. Hypothermia was observed in 10 babies (1.4%) during this phase.

Practical Implications: Hypothermia is a preventable cause of neonatal mortality which can be easily prevented by training of health care providers, midwives, and lady health visitors to incorporate components of essential newborn care in their medical practice.

Conclusion: Implementation of POQCI was found to be highly applicable yielding good response.

Keywords: Newborn, hypothermia, immediate drying, point of care quality improvement, neonatal intensive care unit.

INTRODUCTION

According to UNICEF statistics, the child mortality rate in Pakistan is abysmal.¹ The latest data shows neonatal mortality rate of 42/1000 live-births while it accounts for 7% of all neonatal mortality worldwide.² Hypothermia is a significant problem in neonates at birth and associated with significant morbidity and mortality.^{3,4}

Newborns are prone to develop hypothermia due to larger surface area/unit body weight, limited heat generation mechanisms and vulnerability to getting exposed due to lack of professional alertness of healthcare providers.⁵ Situation causing excessive heat loss includes cold environment, wet or naked baby, cold linen, during transport and procedures like bathing and infusions. Neutral thermal environment 36.5-37.3 °C shall be maintained (environmental temperature in which infant can maintain normal body temperature with least amount of BMR and oxygen consumption).^{6,7}

Hypothermia can be prevented with warm delivery rooms (>25 °C) immediate drying of babies, skin to skin contact, appropriate clothing and breast feeding.^{8,9} In 2015, World Health Organization initiated a regional framework paving the way for the development of "Point of Care Quality Improvement (POCQI)" method. NMU was one of the centers in Pakistan where POCQI was implemented.¹⁰⁻¹² The main purpose was to introduce four components of early essential newborn care to all the newborn babies to reduce neonatal mortality rate and improve care to mother and baby. Prior to this initiative by UNICEF, there was no set protocol for immediate care of newborn babies in labor room NMU and data was not collected regarding neonatal morbidity and mortality resulting from neonatal hypothermia, hypoglycemia and infection. This study was conducted to find out the current status of prevention of neonatal hypothermia by firstly, initialization of

immediate drying and skin to skin contact of all newborns delivered by spontaneous vaginal delivery, and secondly, to initiate early breast feeding.

METHODOLOGY

This was an observational study carried out in labor room of Gyne Unit 1, Nishtar Medical University (NMU) and Hospital, Multan Pakistan from April to September 2019. Approval from Institutional Ethical Committee was acquired. Informed and written consents were sought from all mothers participating in this study.

After a departmental meeting in institutional obstetrics and gynecology department, a team was established including the team leaders, postgraduate registrars, and nurse in-charge of labor room. The details of initiative were explained to them, duties assigned, and fortnightly meetings were arranged for follow up. Based on "Point of Care Quality Improvement (POCQI)" guidelines, Initially, data were collected for 4 weeks during morning shift (phase 1) utilizing 2 indicators i-e immediate drying and number of babies who developed hypothermia within one hour of birth. Data were analyzed; results interpreted, and necessary modifications made. After implementation of changes further data was collected for 24 hours shift of gyne unit 1 for the rest of study period including additional indicators i.e., initiation of early breastfeeding and skin to skin contact. We initiated immediate drying and provide skin to skin contact to all the newborns delivered by SVD in labor room during morning shift of Gyne unit 1 by the end of April 2019 from 0 to 60% to prevent the neonatal hypothermia. The data was collected for 4 weeks and results reviewed. New changes were then implemented and the project was extended to 24 hours emergency of Gyne Unit 1 labor room for next five months to achieve 100%. We initiated and improved

early breastfeeding within one hour of birth from 0 to 60% by end of September 2019.

Before the study, there was no set protocol for immediate care of the baby or temperature record in labour room at NMU. Skin to skin contact was not being practiced. Data was never maintained. After POCQI project by UNICEF, this process was started and identified any barriers in providing care and difficulties encountered. Figure-1 is showing neonatal care flow chart at NMU, Multan Pakistan.



Figure-1: Neonatal Care Flow Chart at Nishtar Medical University/Hospital, Multan Pakistan

Table-1: Outcome parameters During the Study Period (n=744)

Parameters	April (n=24)	May (n=99)	June (n=108)	July (n=80)	August (n=137)	September (n=296)
Proportion of newborn who were wiped and dried thoroughly	24 (100%)	99 (100%)	107 (99.1%)	80 (100%)	137 (100%)	296 (100%)
Proportion of newborn who were given skin to skin care for at-least 1 hour after birth	10 (41.3%)	43 (43.4%)	98 (90.7%)	51 (63.8%)	119 (86.9%)	281 (94.9%)
Proportion of Newborn in which breastfeeding was initiated within 1 hour after the birth	0 (0%)	42 (42.4%)	88 (81.5%)	44 (55.0%)	119 (86.9%)	276 (93.2%)
Proportion of newborns with temperature recorded at one hour	20 (83.3%)	91 (91.9%)	97 (89.8%)	60 (75.0%)	123 (89.8%)	157 (53.0%)
Proportion of newborn who suffered from hypothermia within one hour of birth	-	-	-	2 (2.5%)	6 (4.4%)	3 (1.0%)
Proportion of women given uterotonic within one minute of delivery	-	-	-	80 (100%)	137 (100%)	296 (100%)
Proportion of women with Post-Partum Hemorrhage	-	-	-	-	-	-
Proportion of babies with danger signs and referred to neonatal unit	-	-	-	-	14 (10.2%)	24 (8.1%)
Babies with weight less than 2.5 kg	4 (16.6%)	18 (18.2%)	23 (21.3%)	35 (43.8%)	25 (18.2%)	28 (9.5%)

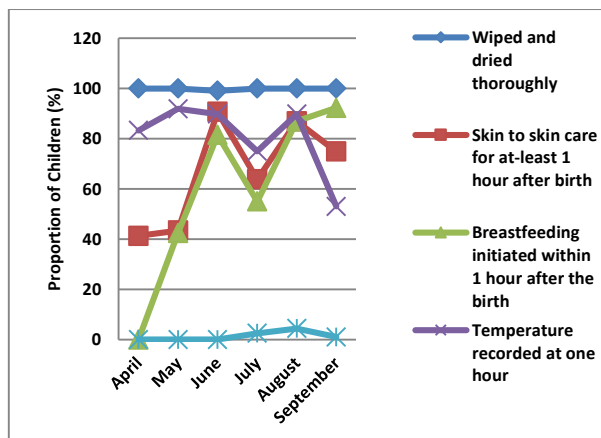


Figure-2: Graphical Representation of Proportion of Children with POCQI Parameters

We noted number of live babies dried immediately and provided skin to skin contact. We also noted number of babies initiated with early breast feeding. Number of babies with hypothermia (temp < 36.5 °C) after one hour were noted. A special proforma was designed to record all study data. "Statistical Package for Social Sciences (SPSS)" version 26.0 was used for data analysis. Data was shown as frequency and percentages.

RESULTS

A total of 744 babies delivered over a period of six months during this initiative, which was carried out in 2 phases, the phase-1 comprised of four weeks and included study of 24 babies and the phase 2 included 720 babies over five months.

During phase-1, 100% newborns were dried immediately after birth and the temperature was recorded among 20 (83.3%) of the babies with lost to follow up of 4 (16.7%) babies due to shifting to NICU for intensive care. Hypothermia was not observed (0%). During the second phase, among 720 babies that were delivered, 590 (81.9%) received skin-to-skin care for minimum of half hour due to rapid turnover of patients for delivery in labor room. Breastfeeding was initiated within one hour after birth in 593 babies (82.3%). Temperature was recorded among 528 (73.3%) babies with 37 (5.1%) shifted to NICU. Hypothermia was observed in 10 babies (1.4%) during this phase. Table-1 is showing details of outcome parameters. Figure-2 is showing graphical representation of proportion of children with POCQI parameters.

DISCUSSION

Last couple of decades has witnessed lots of improvements regarding redesigning of healthcare systems and numerous quality control systems yet goal of attainment of optimal newborn care is long way away for a developing country like Pakistan. Researchers have shown scaling up the requirement of a long-term commitment in terms of extensive training programs, continuous support, data recording/maintenance and analysis to be some of the major pillars thought to help improvement in outcomes.¹³⁻¹⁵ It is also vital to adopt better human resource practices to promote a healthy and rewarding organizational culture helping implementation of newer ideas.

With increased awareness to potential factors which were previously unnoticed during medical management, there was improvement in medical care and establishment of guidelines for prevention of neonatal hypothermia.¹⁶⁻¹⁸ We made amendments in establishment of medical teams that would help in sustainability of this quality of care initiative, making it a hospital policy. We found implementation of POCQI challenging but with cooperation of the

team executing POQCI, soon, we were able to overcome perceptual and executional challenges during the course of our study period. Issues related to people, procedure, policy and place were addressed in details at the start of this project. The paramedical staff was motivated and kept involved in providing early essential new born care. The administrative issues in providing, support and required logistics solved by generating funds.

Hypothermia was recorded in 1.4% of babies during the course of the study which showed that POQCI was effective in preventing hypothermia in vast majority of newborns in this study. A recent regional study by Patodia J et al showed that implementation of WHO POCQI resulted in overall reduction of hyperthermia from 82% to 45%.¹² POQCI is cost effective approach that can reduce neonatal intensive care unit (NICU) admissions while in a developing country like Pakistan with resource limitations, prevention of hypothermia can potentially reduce overall burden of morbidity and mortality.^{19,20}

Our study had some limitations as well. Being a single center study on a relatively small duration, our findings should not be generalized and warrants more research and documentation of data about implementation and outcomes at multiple centers. We were unable to quantify various issues faces regarding implementation of POQCI at our center. We were unable to measure satisfaction and response of community regarding execution and outcomes of POQCI.

CONCLUSION

Implementation of POQCI was found to be highly applicable yielding good response. Hypothermia is a preventable cause of neonatal mortality which can be easily prevented by training of health care providers, midwives, and lady health visitors to incorporate components of essential newborn care in their medical practice. Newer framework, models and interventions can help us in describing and understanding issues at hand. Comprehensive trainings along availability of funding and human resource are vital for the implementation of newer approaches like POQCI.

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