New-born Thermal Care in Western Uttar Pradesh – Gap Analysis Between Knowledge and Practices

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Abstract

Background: The provision of health care services including maternal and new-born care is considered to be a dynamic system of entitlement and obligations among people, the communities, service providers, and the concerned governments. Thermal control remains poor in new-born owing to immaturity of the thermoregulatory center and new-born become vulnerable to hypothermia especially premature babies, intrauterine growth retardation and LBW babies and even normal babies.

Methods: The study population comprised women of reproductive age (15 to 49 years) who have delivered a live baby within the past 12 weeks prior to the conduct of study. Out of 6 block, most populous villages were selected, one near the CHC and 2nd farthest from CHC and high priority was given to villages where ASHA and ANM are appointed. 61 villages of 6 blocks were covered under the study.

Results: The knowledge on thermal protection of baby, 60.9% of the respondents were well aware about how to keep baby warm after delivery, 71.4% of respondents knew that baby should be dried soon after birth, 64.9% of the respondents had idea of time to dry the baby, 69.6% of the respondents had knowledge that baby should be wrapped soon after birth.

Conclusion: The findings of the study provide an insight into the existing knowledge and necessitate a need for quantitative studies in the study area to assess knowledge & practices related to thermal protection of new-born. The authors emphasize on a need for improving community awareness for promotion of neonatal care and improve health system to meet the demands of birthing mothers and needs of neonates.

Background

The provision of health care services including maternal and new-born care is considered to be a dynamic system of entitlement and obligations among people, the communities, service providers, and the concerned governments. The global commitment of Sustainable Development Goals (SDGs) as per target 3.2 to “end all the preventable deaths of newborns and under 5 years children with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births” has pushed the maternal and child health services in India for timely achieving this target [1, 2]. The concept of Universal Health Coverage and equitable distribution of health services is expected to bridge the gap reflected by high variations in maternal and child health indices of our country [3]. Child survival has shown some improvement globally, however, the progress has been slow for maternal, perinatal and neonatal health. Birthing being a natural phenomenon still fraught with danger for the mother and newborn especially in cases of developing countries. To ensure that labor and the first 24 hours postpartum are managed by a skilled health care provider is one of the keys to achieving the desirable aim [4].

“The period from birth to 28 days of life is called neonatal period and the infant in this period is termed as neonate or new-born baby” [5]. The days and weeks following childbirth, called the postnatal period, is a

critical phase in the lives of mothers and newborn babies. This is the phase in life having greatest risk of mortality and maximum potential for physical and neurocognitive developmental stress which might be even long term. The State-Level Disease Burden Initiative Child Mortality Collaborators have revealed that the under-5-year mortality rate (U5MR) in India has decreased from 83.1 deaths per 1000 live births in 2000 to 42.4 deaths per 1000 livebirths in 2017 causing a 49% decrease, and the neonatal mortality rate (NMR) decreased from 38.0 deaths to 23.5 deaths per 1000 livebirths causing 38% decrease [6]. The variation of U5MR was 5.7 times between the different states and 10.5 times between 723 districts in 2017, whereas the neonatal mortality rate varied between 4.5 times (across the states) to 8.0 times (across the districts) [7].

The WHO stated that approximately 2.4 million in 2019 neonates have died in 2019 and one third of under 5 deaths also occur in neonatal time frame [8]. Hypothermia has remained a common problem in neonates especially in the developing countries where it contributes to neonatal mortality and morbidity more commonly in the immediate neonatal period. Thus, also considered as silent killer in the neonates [9].

Neonatal hypothermia defined by WHO as core body temperature less than 36.5°C (97.7°F). It is classified into three categories based on severity- mild (36.0 to 36.4°C), moderate (32.0 to 35.9°C) and severe (< 32°C) [10, 11]. Thermal control remains poor in new-born owing to immaturity of the thermoregulatory centre and new-born become vulnerable to hypothermia especially premature babies, intrauterine growth retardation and LBW babies and even normal babies [12].

Neonatal hypothermia was associated with a five-times rise in mortality during the first 5 days of life [13]. Previous studies had also revealed that every one-degree Celsius decrease of neonate's body temperature increases the risk of mortality by 80 % [12–14].

Care practices immediately after the delivery contribute to new-borns' risk of morbidity and mortality. A set of practices that have reduced the neonatal morbidity and mortality have been outlined as essential newborn care practices. These practices include "clean cord care" (cutting the umbilical cord with a sterilized instrument and tying it with a sterilized thread); "thermal care" (drying and wrapping the newborn immediately after delivery and delaying the newborn's first bath for at least six hours or several days to reduce the risk of hypothermia); and initiating "breastfeeding within the first hour after birth" [15].

Deliveries conducted at home cause unacceptably high proportion of maternal and perinatal mortality especially in rural settings of India. The various clinical signs of neonatal hypothermia are "skin temperature less than 36.5°C, hands, feet, abdomen are cold to touch, weak and lethargy, bluish extremities, slow heart rate and irregular respiration" [16].

New-born care is of critical importance for the proper development and health of a child. Because for a new-born most frequent caretaker is their own mothers and it is mother's knowledge and practices that determines the future of the new-born. New-born care is strongly influenced by women's social and health status and by home care and practices for mother and newborn, as well as by accessibility of

maternal and new-born cares services. Traditional care practices at home and in the community affect the maternal and new-born health inevitably. Thermoregulation is one of the challenging aspects of neonatal care [17].

Maintenance of the natural thermal environment is one of the most effective and cost-effective interventions to be practiced by everyone. Improving newborn survival is an utmost priority of child health today. Apart from coexisting problems in low birth weight neonate, the thermal control even in normal baby is greatly influenced by both the knowledge and practice of caregivers specifically mother. Though the district Jyotiba Phule Nagar (Amroha) is a part of the developed region of Uttar Pradesh, yet, there may be certain gaps in the development of different sectors of the district including health. Even though there are few studies assessing new-born care practices in Uttar-Pradesh, there was no study done in district Jyotiba Phule Nagar. The main aim was to assess the knowledge & practices regarding thermal protection & and find-out the determinants responsible for that.

Methods

A community-based cross- sectional study was conducted in Amroha District, previously known as Jyotiba Phule Nagar, is one of the 75 districts of Uttar Pradesh state in northern India.

Study period: From 1st August 2018 to 31st July 2019 (12 months duration)

Study Population: The primary study population comprised women of reproductive age (15 to 49 years) who had delivered a live baby within the past 12 weeks prior to the conduct of this study (RDW). The 12-weeks limit was set with the purpose of resolving recall bias by the mother.

Sample Size Estimation: The required sample size for the survey among the mothers of children aged 0–12 weeks was calculated based on the standard formula for one point sample estimation:

$$\text{Sample Size} = \frac{Z^2_{1-\alpha/2} P (1-P)}{d^2}$$

To ensure coverage of minimum required sample size for estimating various outcome indicators of the study the value of 'P' (neonatal morbidity) is taken as 50.3% .10 With the above assumption the required sample size at 95 percent level of confidence with 5 percent of permissible error in the estimates, is worked out as: $n = 1.962 * 0.503 * 0.497 / 0.052 = 384$. With consideration of 10% non-response rate the sample size was 427. The total sample of 427 households would be divided between the six blocks according to Probability Proportional to Size. Thus, in each block, number of villages in each direction was selected for the survey with assumption of 7 RDW per village to complete required sample size.

Study tool: A predesigned and pretested structured questionnaire in the form of multiple-choice questions was used as study tool. It was developed to determine the knowledge and practices regarding thermal

care of postnatal mothers/ caregivers on newborn care. That was divided in to 2 sections.

- Section A: Socio Demographic information
- Section B: Knowledge and Practice questionnaire on newborn thermal care

The questionnaire had 12 items regarding Knowledge and Practices of mother/ caregiver about newborn care. Each correct response carried one mark; thus, the maximum possible score was 7 for knowledge and 5 for practices regarding thermal care. For each geographical area (blocks) knowledge and practices total score was calculated separately and categorized in to three grades: Good, Fair and Poor.

Sampling Procedures: The district is divided into 1133 villages, 3 tehsils, and 6 blocks. Blocks are Dhanaura, Amroha, Gajrola, Gangeshwari, Hasanpur, and Joya. From each block most populous villages were selected, one near the CHC and 2nd farthest from CHC and high priority was given to villages where ASHA and ANM were appointed. A total of 61 villages of 6 blocks were covered under the study (Fig. 1).

Procedure for Selection of Households- The number of households selected per village was fixed at 7. In each village, to select the required number of respondents systematic random sampling methodology was used. The field supervisor will move to the center of the village and select first household randomly. In the contacted households, it was verified whether the household have a child who was aged 0–12 weeks of age. If the child and the mother are present there then the household was selected and the structured questionnaire will be canvassed. If not, the investigator will move to the immediate next household for the similar enquiry.

Selection of Respondents: In each selected household where the child aged 0–12 weeks would be identified, the mother of the selected child will contact for the interview. In a selected household, if more than one child was there, the mother of the youngest child would be contacted for the interview. Training was given for data collection and the overall data collection activities were supervised by principal investigator.

Data analysis: The data was entered in MSExcel, critically analyzed and tabulated using SPSS- 20 version software. Appropriate statistical tests of significance (Logistic regression) were applied to test and validate the findings of the study. Adjusted and unadjusted odds ratios (OR) and their 95% confidence intervals (CIs) were used as indicators of the strength of association. A p-value of 0.05 or less was used as cut off level for statistical significance.

Result

Total 427 respondents were enrolled in the study from 6 blocks of Amroha district. Maximum numbers of respondent were from Joya Block 98(22.95%) followed by Amroha, Dhanaura, Gangeshwari, Hasanpur & minimum number of respondents were from Gajrola Block 57(13.3%). While assessing the socio-demographic variables of respondents more than half of the sample women 218(51.1%) were belonged to 18 to 25 years age group, half 224(52.5%) Hindu by religion, majority of mothers i.e., 251 (58.8%) in all

the blocks never went to school & almost 421(98.6%) were housewife by occupation. On the other hand, more than half of fathers 227(53.2%) were laborer by occupation & illiterate 114(26.7%) by education. Almost 258(60.4%) families were belonged to nuclear families & 264(61.8%) respondents from category IV socioeconomic class. (Table 1) While assessing the respondent's knowledge about thermal protection of baby, a wide variation was seen among population of different blocks. Overall, 62.5 % of the respondents were well aware about how to keep baby warm after delivery. Maximum knowledge in these regards was found at Hasanpur followed by Gajrola block. 71.4% of respondents knew that baby should be dried soon after birth, 64.9% of the respondents had idea of time to dry the baby, 69.6% of the respondents had knowledge that baby should be wrapped soon after birth but only 27.4% of respondents mentioned the right time to wrap the baby. In all foresaid parameters maximum knowledge was found among mother residing in Joya block. only 15.5% of the respondents had knowledge about the what kind of cloth should be used to wrap the baby. Among all Knowledge components Maximum knowledge was observed about the right time when to give first bath to baby. 90.6% mothers had correct knowledge in this concern. (Table 2) Promoted thermal protection to improve the "warm chain" for newborns, is an essential component of essential newborn care (ENC). ENC to prevent neonatal hypothermia (temp < 36.5), a leading cause of neonatal mortality. Out of total 53.6% of the respondents reported that they had placed baby in skin contact on belly/chest after birth and this practice was found to be most prevalent in Gajrola followed by Hasanpur block. 44.5% of respondents had placed baby on right time in skin contact on belly/chest, 60.2% of respondents wiped the baby within stipulated time after delivery but only 20.0% of caregivers wrapped baby with cloth after delivery within expected time. 82.4% of caregivers claimed that they had given first baby bath at recommended time. Block wise variation was observed in different practices. Thermal care was best practiced at Gajrola block except one domain i.e., wrapping of baby in cloth after delivery. Worst practice performance was found at Joya block for most of the thermal care practices. (Table 3) While assessing the determinants responsible for the knowledge regarding Thermal Protection, age of mother, child's mother religion, education, occupation was found significantly associated with the knowledge of the respondents. Good knowledge found in Mothers of age more than 35 year, belongs to non-Hindu religion, nonworking, having above 10th education level, and belongs to either socioeconomic status I or II and from nuclear family. Effect of mother's age, religion, education, and occupation on knowledge regarding Thermal Protection is found statistically significant. (Table 4)

Table 1
Respondents/Mothers population distribution (n
427)

Sociodemographic Variables	Response n (%)
Community Blocks	
Dhanaura	64 (14.99)
Amroha	83 (19.44)
Gajrola	57 (13.35)
Gangeshwari	63 (14.75)
Hasanpur	62 (14.52)
Joya	98 (22.95)
Age groups	
18–25 years	218 (51.1)
26–30 years	176 (41.2)
31–35 years	25 (5.9)
> 35 years	8 (1.9)
Child's Mother religion	
Hindu	224(52.5)
Muslim/Sikh/Other	203 (47.5)
Child's Mother education	
≤ 10th	294 (68.9)
> 10th	33 (31.1)
Child's Mother occupation	
Housewife	421(98.6)
Working	06 (1.4)
Socio-economic status	
I	5(1.2)
II	19(4.4)
III	67(15.7)
IV	264(61.8)

Sociodemographic Variables	Response n (%)
V	72(16.9)
Type of family	
Nuclear	258(60.4)
Joint	169(39.6)

Table 2
Percentage of respondents having correct knowledge about thermal protection

Thermal protection- Variable	Respondents having correct knowledge						Total
	Dhanaura	Amroha	Gajrola	Gangeshwari	Hasanpur	Joya	
Methods to keep baby warm after delivery	69.8%	63.95%	73.7%	60.3%	74.2%	43.9%	62.5%
Should baby be dried after birth	73.4%	73.5%	77.2%	55.6%	51.6%	87.8%	71.4%
Time to dry the baby	62.5%	67.5%	77.2%	47.6%	48.4%	78.6%	64.9%
Should baby be wrapped after birth	75.0%	75.9%	77.2%	41.3%	48.4%	87.8%	69.6%
Time to wrap the baby	28.1%	34.9%	10.5%	13.2	5.4%	54.1%	27.4%
Kind of cloth should be used to wrap the baby	42.2%	16.9%	8.7%	19%	9.7%	3.1%	15.5%
Time to give first bath to baby	98.4%	96.4%	94.7%	77.8%	83.9%	90.8%	90.6%

Table 3

Percentage of respondents/mothers/caregivers with correct Thermal Protection related Newborn Care Practices (immediately after recent delivery)

Variable	Respondents having correct practice						Total
	Dhanaura	Amroha	Gajrola	Gangeshwari	Hasanpur	Joya	
After birth baby was placed in skin contact on belly/chest	51.9%	58.7%	68.4%	49.2%	66.1%	37.1%	53.6%
When was the baby placed in skin contact on belly/chest	51.6%	41.0%	56.1%	40.8%	57.7%	32.9%	44.5%
When was the baby wiped (dried) after delivery	61.9%	58.7%	75.4%	42.9%	40.0%	76.5%	60.2%
When was the baby wrapped with cloth after delivery	25.0%	31.3%	8.8%	9.5%	4.8%	38.8%	22.0%
How long after birth was baby bathed for first time	89.1%	91.6%	87.7%	68.3%	72.6%	82.7%	82.4%

Table 4
Determinants of Good Knowledge about thermal protection among respondents

Variable	Thermal Protection (Have Good knowledge n = 237)	
	Unadjusted OR (95%CI)	Adjusted OR (95% CI)
Age of mother		
18–25 years ^{Ref}	1	1
26–30 years	1.0 (0.7–1.5)	0.9 (0.7–1.8)
31–35 years	0.9 (0.7–1.6)	0.8 (0.6–1.8)
> 35 years	1.4 (1.1–2.2)	1.3 (1.1–2.1)
p value	0.037	
Child's Mother religion		
Hindu ^{Ref}	1	1
Muslim/Sikh/Other	1.3 (1.2–2.1)	1.3 (1.1–2.2)
p value	0.032	
Child's Mother education		
≤ 10 th Ref	1	1
> 10th	1.8(1.6–2.7)	2.1(1.8–2.8)
p value	0.028	
Child's Mother occupation		
Housewife ^{Ref}	1	1
Working	0.7 (0.4–1.3)	0.7 (0.5–1.2)
p value	0.031	
Socio-economic status		
I ^{Ref}	1	1
II	1.0 (0.8–1.2)	1.0(0.9–1.1)
III	0.8(0.5–1.2)	0.6(0.4–1.2)
IV	0.8(0.7–1.3)	0.7(0.5–1.1)
V	0.7(0.5–1.1)	0.5(0.4–1.2)
p value	0.059	

Variable	Thermal Protection (Have Good knowledge n = 237)	
	Unadjusted OR (95%CI)	Adjusted OR (95% CI)
Type of family		
Nuclear ^{Ref}	1	1
Joint	0.9(0.7–1.4)	0.8(0.5–1.3)
p value	0.052	

Mothers of age more than 35 year, nonworking, having above 10th education level, belongs to socioeconomic status I, from joint family and preferred institutional delivery are found to be effective determinants for new-born thermal care practices. Among these determinants good thermal practices were significantly associated with age of mother, mother's education, socioeconomic status and type of family only. (Table 5)

Table 5
Determinants of Good Newborn Care Practices among respondents

Variable	Good Thermal Protection Practices(N = 179)	
	Unadjusted OR (95%CI)	Adjusted OR (95% CI)
Age of mother		
18–25 years ^{Ref}	1	1
26–30 years	0.7 (0.5–1.1)	0.8 (0.6–1.1)
31–35 years	1.0 (0.8–1.2)	1.2 (1.1–1.7)
> 35 years	1.3 (1.1–2.2)	1.3 (1.2–1.9)
p value	.028	
Child’s Mother religion		
Hindu ^{Ref}	1	1
Muslim/Sikh/Others	1.0 (0.8–1.4)	0.9 (0.7–1.3)
p value	0.059	
Child’s Mother education		
≤ 10 th Ref	1	1
> 10th	2.0(1.7–2.5)	1.9(2.1–2.2)
p value	0.038	
Child’s Mother occupation		
Housewife ^{Ref}	1	1
Working	0.7 (0.5–1.6)	0.7 (0.6–1.2)
p value	0.098	
Socio-economic status		
I ^{Ref}	1	1
II	0.6 (0.4–1.2)	0.6 (0.5–1.3)
III	0.5 (0.4–1.1)	0.5 (0.4–1.1)
IV	0.5 (0.3–1.2)	0.5 (0.4–1.2)
V	0.4 (0.3–1.3)	0.4 (0.3–1.4)
p value	0.023	

Variable	Good Thermal Protection Practices(N = 179)	
	Unadjusted OR (95%CI)	Adjusted OR (95% CI)
Type of family		
Nuclear ^{Ref}	1	1
Joint	1.4 (1.2–1.7)	1.4 (1.3–1.8)
p value	0.041	
Type of delivery		
Home Ref	1	1
Institutional	1.2(1.1–1.7)	1.2 (1.1–1.6)
p value	0.028	

Table 6
Gap analysis in between Knowledge & Practices among
respondents

Variable	Thermal Protection (Mean Score)	
	Knowledge	Practices
Total	5.18 ± 1.3	3.28 ± 1.44
Block		
Amroha	5.86	3.12
Dhanaura	5.48	4.04
Gajrola	6.08	3.92
Gangeshwari	3.66	2.81
Hasanpur	3.96	3.86
Joya	5.98	3.96
Age of mother		
18–25 years	5.36	3.98
26–30 years	5.88	2.96
31–35 years	4.48	4.02
> 35 years	6.16	4.42
Child's Mother religion		
Hindu	5.08	3.86
Muslim	6.14	3.02
Sikh	6.26	4.12
Child's Mother occupation		
Housewife	5.88	3.98
Working	3.16	3.72
Child's Mother education		
< 10th	3.36	3.78
> 10th	5.12	4.02
Type of family		
Nuclear	5.28	3.64
Joint	4.96	4.08

Variable	Thermal Protection (Mean Score)	
Socio-economic status		
I	6.48	4.40
II	6.42	4.18
III	5.86	3.78
IV	5.32	3.22
V	4.12	3.02

Overall knowledge about the thermal protection is good in majority 237(55.5%) of the respondents. In the population pool having good knowledge, maximum contribution was from Joya and minimum from Gangeshwari block. Overall, 25.9% of respondents had poor level of knowledge and worst condition in this pool was found in Gangeshwari block. (Fig. 2) Overall majority (41.9%) of respondents had good new-born practices score while 24.1% and 34.0% respondents had fair and poor newborn practices score respectively. More than half of population scored good level of practice at Dhanaura block whereas almost half of the population was found under poor score of practices at Gangeshwari block. (Fig. 3)

Discussion

Incidence of hypothermia in newborns in India varies from about 11 per cent of all newborns to as many as 45 per cent newborns in home settings. Behavioral risk factors like not drying or wiping the newborn immediately after birth, bathing the newborn soon after birth are among the major risk factors for neonatal hypothermia, while skin to skin contact can be an important measure to prevent hypothermia [18, 19]. We have studied maternal behavioral risk factors associated with neonatal hypothermia in this study. While assessing the knowledge on thermal protection of baby, it was found that overall knowledge about the thermal protection is good in majority 237(55.5%) of the respondents & fair in 79(18.5%) of respondents. Study done in Northern India about knowledge on prevention of heat loss, 45% of mothers had adequate knowledge of drying the baby immediately. Association of concept of bathing the new-born as a cause of hypothermia was observed in 15% of mothers. 45% mothers knew that not wiping the baby or not drying after birth may cause hypothermia. Only 54% mothers had knowledge of covering the baby with warm blanket or clothes in multiple layers to prevent heat loss [20]. Similar findings were reported in study from Dhaka, Bangladesh explained that babies were typically bathed soon after birth to purify them from the birthing process [21]. In Nepal, less than half of new-borns were wrapped within the first 10 minutes after birth and almost all of them were bathed within minutes or hours after birth [22, 23]. Study done by Tumla Shrestha, Saraswoti Gautam Bhattarai, Kalpana Silwal in Nepal 2013 [24] about the knowledge of a postnatal mothers on the care of new-born, majority 76 (76%) answered as keeping the newborn warm, 50 (50%) said bathing and cleaning & 82 (82%) of respondents said wrapping with warm clothes & nine (9%) have knowledge in delay bathing to keep new-born warm. Studies mostly from South

Asia include insufficient heating of the birth place, placing the uncovered new-born on the ground or other cold surfaces, delayed wrapping and early bathing all contributing to hypothermia [24–26]. The findings of this study with exception of timing of bathing after birth are similar to the studies from other parts of India, Nepal and Bangladesh which reflects on the similar socio-cultural milieu in the Indian sub-continent. Wiping was correctly practiced by 60.2% mothers and 82.4% were delayed the first baby bath. Wiping the babies is practiced by 31% of mothers to protect from hypothermia and many thought baby bath should not be done or must be postponed [27]. Hypothermia during transfer is also an aggravating factor which should be avoided. 54% of mother had knowledge of covering the baby in layers of cloth and blankets and only 3% of mothers were aware of KMC to protect the baby from hypothermia during transport [28–30]. Our study shows that increasing level of maternal education and specific religious group were associated with better thermal protection knowledge and practice of the newborn. Similar findings have been reported in the study from Nepal. Higher educational status may be associated with increased level of awareness regarding good practices of thermal protection. Also it is also possible that mothers with higher education and those may be able to resist harmful cultural practices with respect to thermal protection prevalent in the community [31]. Increasing age is likely to be associated with higher parity, which may be associated with more exposure to thermal protection knowledge and make the practices better during previous pregnancies and childbirth episodes. This finding is corroborated by a study done in Uganda [32].

Working women though had poor knowledge of measures of prevention of hypothermia in newborn in our study. It may be explained by the fact that the district in which this study was done is one of the less developed districts in India and the society is highly patriarchal in nature. It may be possible that only women with very poor socioeconomic status and limited or no education are working to feed their families - likely in informal sector among the study participants.

Higher socioeconomic status higher level of education and delivery in an institution are inter-related and well documented [33]. All these factors were significantly associated in our study with better practices regarding prevention of hypothermia among the newborns in the mothers. Mothers living in joint families had significantly more correct practices with respect to hypothermia prevention in our study. This may be due to transmission of information regarding newborn rearing practices among women living in joint families - some of whom might have had previous childbirth in institutional settings or have acquired correct information during previous pregnancies or childbirth. It should also be noted that even within the same district the knowledge and practice regarding good newborn care practices to prevent hypothermia are not uniform across the sub-divisions within the districts (Block/ tehsils). While Gangeshwari and Hasanpur blocks had the lowest score both in knowledge component; Gangeshwari and Amroha had lower scores in the practice component of it. The differences may be due to different levels of industrialization and urbanization in these blocks and also because of diversity in religious and social composition across these blocks.

Conclusion

The findings of the study provide an insight into the existing knowledge and necessitate a need for quantitative studies in the study area to access knowledge & practices related to thermal protection of new-born. There is a need for improving community awareness to promote institutional deliveries and improve health system to satisfy demands of birthing women. When home birth is inevitable, families should be encouraged to engage skilled birth attendant to provide better new-born care. Understanding and addressing community-based practices on hypothermia, prevention and management might help to improve new-born survival in resource-limited settings. Infants born small or prematurely are recognized as needing more intense thermal protection. Health education on essential new-born care practices should be integrated into routine antenatal services and re-emphasized in the postnatal period to help improve maternal knowledge towards thermal care practices.

Abbreviations

ANM- Auxiliary Nurse Midwife

ASHA- Accredited Social Health Activist

CHC- Community Health Centre

CI-Confidence Interval

ENC-Essential Neonatal Care

LBW- Low Birth Weight

MS-Microsoft

OR-Odds Ratio

RDW- Recently Delivered Women

SDGs- Sustainable Development Goals

WHO- World Health Organization

Declarations

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Figures

Figure 1

Sampling procedure of study participants

Figure 1: Community Block wise distribution of Knowledge about Thermal Protection (Based on total score)

Figure 2

Community wise distribution of newborn care thermal practices

**Figure 2: Community Block wise distribution of Newborn Care thermal care Practices
(Based on total score)**

Figure 3

Community block wise distribution of knowledge about thermal protection