

Brief Reports

Accuracy of Maternal Perception of Neonatal Temperature

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Neonatal hypothermia is a common and widespread problem even in tropical developing countries(1,2). Majority of the deliveries in these countries are conducted at home either by traditional birth attendants or by relatives. Therefore, methods of prevention of neonatal hypothermia, *i.e.*, warming the delivery room, wiping and wrapping the baby, and early maternal skin-to-skin contact are being popularized among them(3). Early recognition of hypothermia and prompt rewarming in home births is equally important. Mothers often assess hypothermia by touching and feeling the temperature of the baby. Studies in hospital settings have demonstrated that physicians and trained assistants can perceive the temperature of the newborn with reasonable accuracy by touching the skin of the baby(4-6). However, accuracy of mothers' assessment of the temperature of the baby by means of touching is not known. This study was therefore designed to determine the accuracy of mothers'

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perception of neonatal hypothermia by touching the baby.

Subjects and Methods

The study was carried out in a cluster of 10 villages of Raipur Rani Community Development Block, District Ambala (Haryana). Data was collected for one year during 1992-93 so as to include all seasons. One field worker visited each of the study villages on working days. Child care workers (Anganwadi workers), traditional birth attendants, and key informants were contacted and births that had occurred in the village since previous visit were registered. Then the family was visited to record the identification data of the newborn. Field worker perceived the temperature of the baby by touching at the abdomen and recorded his perception as normal, cold, very cold, and hot. Similarly mothers were asked to feel the temperature and their responses were also recorded on a precoded form. After that axillary temperature of the newborn was recorded by the field worker who had been trained in the procedure of temperature measurement using a standardized low reading clinical thermometer which was placed in the axilla of the baby for 3 minutes after bringing down the mercury to below 25°C. Appropriate advice was given to the mother after temperature recording.

Data was analyzed by Epi Info Computer Package(7). The percentage of babies in whom mothers and field worker could correctly perceive hypothermia, hyper-thermia and normothermia were calculated against the axillary temperature of the baby recorded using a thermometer. A temperature between 36.5 to 37.4°C was considered as normal, between 36.0-36.4°C

as mild hypothermia (cold stress), between 32.0-35.9°C as moderate hypothermia, and below 32° C as severe hypothermia whereas temperature of 37.5°C or more was considered to be hyperthermia(3).

Results

Of the 189 babies studied 32.3% were hypothermic (axillary temperature <36.5°C) and 19.6% had hyperthermia. Distribution of maternal and field workers' perception of the newborn temperature according to the axillary temperature of the baby is shown in *Table I*. Mothers and field worker could correctly categorize 24.6% and 34.4% babies, respectively as 'cold' or 'very cold' who had hypothermia (temperature <36.5°C). Perception of moderate hypothermia was correct in 46.7% for mothers and in 56.7% for field worker whereas mild hypothermia (cold stress) was correctly perceived by only 3.2% and 12.9%, respectively. Hyperthermia was correctly perceived in 21.6% babies by mothers and in 32.4% by field worker, whereas 95.6% and 92.3% of the babies having temperature in the normal range, *i.e.*, 36.5-37.4°C were

correctly categorized as 'normal' by mothers and field worker, respectively.

Discussion

Feeling the temperature of the baby could be an important way of assessing hypothermia in places where thermometer is not available(4-6). Abdominal temperature in neonates is considered to be representative of the core temperature and is thought to be a reliable method of diagnosing hypothermia; warm and pink feet indicate thermal comfort, cold feet and warm abdomen suggest cold stress, and cold feet and cold abdomen reflect hypothermia(8).

Ability of mothers and field worker in assessing the temperature of the baby by touching at the abdomen was poor in this study. Nearly half of the hypothermic (axillary temperature <36.5°C) and more than one third of the hyperthermic babies were missed by them. However, their perception of moderate hypothermia was better. As none of the babies in this study had severe hypothermia, mothers' and field workers' ability of detecting severe hypothermia by touch could not be

TABLE I—Accuracy of Mothers' and Field Workers' Perception of Temperature of the Newborn

Perceived temperature	Axillary temperature of the newborn in °C				Total
	32.0-35.9	36.0-36.4	36.5-37.4	37.5-39.0	
No.	30	31	91	37	189
<i>Mothers</i>					
Normal	16	30	87	28	161
Cold	10	1	3	1	15
Very cold	4	0	0	0	4
Hot	0	0	1	8	9
<i>Field workers</i>					
Normal	13	27	84	25	149
Cold	13	4	5	0	22
Very cold	4	0	0	0	4
Hot	0	0	2	12	14

evaluated. However, perception of mothers and field workers was observed to be better as temperature of the baby decreased (mothers and field worker had correctly detected 2 babies as 'cold' who had temperature between 32.0-32.9 °C).

Research assistance in a Kathmandu Maternity Hospital could correctly perceive temperature by touching the foot of the baby in 81% of the cases who had rectal temperature of <36°C(4). A good correlation has also been reported between physicians' perception of temperature by touching at abdomen and foot with values recorded with a digital thermometer(5). A study, therefore, needs to be done to determine if training mothers and field worker can improve their ability of identifying hypothermic babies by human touch method without using a thermometer.

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