

RURAL NEONATAL CARE: DAHANU EXPERIENCE

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ABSTRACT

The Rural Neonatal Care Project, started by the Government of Maharashtra in the Ganjad Primary Health Centre, Dahanu block in Maharashtra, had the TBA as the sheet anchor for delivery of neonatal care. Maintenance of "warm chain" and resuscitation of an asphyxiated baby were recognized as the most important interventions besides detection of a very low birth weight/preterm baby and safe transportation of such a baby. Foot length measurement from foot print was used as a surrogate to birth weight as an indicator for referral. Neonatal and perinatal mortality rates dropped appreciably over 3 years and the antenatal registration went up by 30%. The cost of this programme is affordable and the programme itself was acceptable to the community and the TBAs because of its simplicity.

Key words: Neonatal mortality, Perinatal mortality, Infant mortality, Neonatal care, Developing countries.

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Neonatal component of infant deaths has not shown any substantial decline in developing countries(1). In fact, the proportion of neonatal deaths to infant deaths is on the increase. Most health care packages aimed at reduction in infant mortality, just touch the fringe of neonatal care and are confined to tetanus prophylaxis and promotion of breast feeding alongwith improvement of antenatal care and overall living standards to complete the formality. Problems like perinatal asphyxia and thermal instability which are important contributors to neonatal mortality are not covered by the existing programmes with due emphasis.

The present communication deals with a model for domiciliary rural neonatal care with hospital linkages within the existing health infrastructure in the country.

Material and Methods

The project for rural neonatal care was initiated in January 1988 in the Ganjad Primary Health Centre (PHC) area of Dahanu taluka of Thane District (about 140 km north-west of Bombay), which is largely inhabited by tribals. Six sub-centres cater to the needs of 22,240 people residing in this area. The PHC health staff included one Medical Officer, one Lady Health Visitor (LHV), one Nurse Midwife and four Auxilliary Nurse Midwives (ANMs) with no additional staff having been appointed for this project and nor were any monetary incentives offered to the health staff under this project.

Training of Health Staff: The Medical Officer, LHV and one ANM were posted at the Neonatal Unit, J.J. Hospital, Bombay, for a period of two weeks for reorientation in neonatal care. The areas covered in the programme included thermal control, feeding, oxygenation,

labor room care and resuscitation, transport and management of high risk and low birth weight babies. Special emphasis was placed on maternal role in care of the newborn especially the high risk ones.

Baseline survey: Ten clusters (villages/subcentres each with 500-4000 population) from 9 PHC areas of Dahanu taluka were selected by cluster sampling technique. Alternate households in each cluster were selected as the basic sampling unit. Thus, from a population of about 300,000 the survey covered 1954 families and 9684 people. The data was collected by medical students/interns under the supervision of the programme consultants. Details of this survey have been reported earlier(2).

Information regarding births and deaths in the Ganjad PHC area (population of 22,240) was collected for the period 14th January 1987 to 14th January 1988 by a trained multipurpose worker. The survey was conducted in 5 villages and 19 hamlets selected by draw of lots. Every household was covered, encompassing a population of about 9500.

Training of Dais: More than 90% births were taking place at home and were attended by Dais. Therefore, the TBA or Dai training programme formed the heart of the project. The thrust areas in the training module with regard to neonatal care were warmth of the baby, mouth to mouth resuscitation of asphyxiated babies, identification of very low birth weight (LBW) or pre-term babies and safe transportation of high risk babies to the PHC.

Sixty seven Dais identified in the area were enrolled for the training programme. The Training Manual was a photographic album containing about 20 photographs depicting 'dos' and 'don'ts' to implement the above mentioned actions. The training was carried out by the LHV (who herself

was a tribal, conversant with the local dialect and practices) in the PHC area itself. The sessions were informal, allowing for a bi-directional flow of thoughts and ideas between the trainer and the trainee.

The Dais were taught the use of foot length (FL) to identify LBW babies (as a proxy to birth weight) who needed hospital care. Foot length was measured from foot prints taken on paper pads. A 15 cm plastic ruler painted red upto 6.5 cm was the Dai's tool and babies with FL 6.5 cm and less (red zone) required hospital referral. Transportation and referral of high risk babies was facilitated by locating a thermocol box at each village with one of the Dais.

The PHC was mainly a centre for stabilizing the high risk neonate till transfer to an adjoining rural hospital could be facilitated. Those needing short term care were managed at the PHC itself. The facilities provided at the PHC for this intermediate care are given in *Annexure I*.

Results

The mortality indicators used to assess the efficacy of this programme are depicted in *Table I*. The neonatal and perinatal mortality rates progressively declined from the pre-programme level of 57.1 and 74.7 respectively in 1987, to 33.6 and 28.7 respectively in 1990. The antenatal registration of pregnant women in 1990 (630 registrations) showed a 30% increase over pre-programme levels (467 registration in 1987). Birth registration increased from 321 in 1987 to 660 in 1990.

Birth asphyxia: Reporting by the Dai of inadequate or absent respiratory effort coupled with abnormal color was regarded as birth asphyxia.

The cases of asphyxia reported by the Dais annually were 4 (0.7%), 12 (2.1%) and 14 (2.1%) in 1988, 1989 and 1990,

TABLE I—Pre- and Post-Programme Mortality Indicators in Ganjad, PHC

Year	NMR	SBR	PNMR
1987*	57.14	18.69	74.76
1988	38.20	17.94	55.46
1989	27.07	10.15	20.30
1990	33.60	9.09	28.70

* Pre-programme

NMR—Neonatal mortality rate; SBR—Still-birth rate; PNMR—Perinatal mortality rate.

respectively. The low incidence of asphyxia in 1988 could have been a result of under-reporting.

In 1989, in 10 of 12 cases (83.3%) mouth to mouth resuscitation was reported successful. The remaining two babies were either still-born or severely asphyxiated.

Foot length measurement and referral: The ability of the Dais to detect high risk neonates by foot length measurement was good. From 1988-90, the proportion of babies reported with foot length less than 6.5 cm was approximately 2.6% each year. The proportion of neonates referred by the Dais each year to the PHC almost doubled in three years (1.6% in 1988 to 3% in 1990). The percentage of babies that needed to be referred from the PHC to the community hospital was about 20% of all referrals each year and the overall survival of these babies was over 80%. More than 80% babies referred were VLBW babies with FL less than 6.5 cm.

Discussion

The results of the present project clearly indicate the tremendous impact that can be made in perinatal services by appropriate involvement and training of traditional birth attendants for domiciliary care of the mother and her newborn.

The decline in still-birth rates is an indicator of improved antenatal care and appropriate and early referrals of high risk mothers by the TBAs.

The programme had originally envisaged providing each Dai with a resuscitation bag and mask for management of asphyxiated babies. However, escalating costs of equipment and difficulties in maintaining supply lines for equipment repairs and replacement of spares and disinfection procedures, prompted us to train the Dais in mouth to mouth resuscitation for asphyxia management. The low incidence of asphyxia in the community (as reported in this project) is probably yet another reason to train the Dais in the latter technique of resuscitation.

Most low birth weight babies can be managed effectively in the domiciliary setting under adequate supervision. The availability of weighing scales for the detection of LBW in the community has always been a major problem. Several surrogates for birth weight have been used successfully in the community for the detection of babies at risk for neonatal mortality. The use of foot length of less than 6.5 cm for risk detection and referral in the present project was successful in the hands of the TBAs. The cut off of FL of 6.5 cm corresponded to approximately to a birth weight of 1500-1600 g and a gestation of 34 weeks(3). The technique of FL measurement is not only simple but also verifiable by the PHC staff.

We believe that appropriate transportation and functionally effective referral health unit are equally crucial to support domiciliary neonatal care. Hypothermia of the neonate during transportation has remained one of the major hurdles to the salvage of high risk neonates. The use of thermocol boxes in the present study has

proven to be of low cost, effective and a replicable transport model.

In the present project dependence of Dais on PHC of of PHC on district headquarters for functioning of level I care was bare minimum. Level II care (referral services) is fortunately required by a very small number but then its availability boosts the credibility and prestige of the health system. This also makes risk detection meaningful. The Ganjad PHC offered special care neonatal services on the lines of conservative care practised at J.J. Hospital, Bombay(4). We do not recommend a role of referral hospital for PHC. Field duties of the nursing staff are adversely affected when a high-risk baby requiring prolonged hospitalization is admitted at a PHC. A primary health centre should be in a position to stabilize the baby and ensure safe transportation to community hospital. We do not recommend construction of warm room at a PHC but a corner in labor room can be chosen for keeping a baby warm with the help of a heater. Thus, the initial cost of establishing the neonatal services can be lessened substantially (*Annexure II*). Administration of programmes such as the present one is inexpensive and is more acceptable to the PHC health staff, Dais and the community because it is simple to carry out and does not involve technology that causes a 'culture shock'.

Thus, domiciliary neonatal care by TBAs supported by facilities for neonatal care at PHC and Community Hospitals can significantly influence neonatal survival in our country at relatively low costs.

Annexure I—Physical Facilities at the PHC

I. For special care

The PHC was equipped to give Level II (special care) on following lines.

1. A room with wooden partition was con-

structed in one corner of female ward, also functioning as postnatal care ward. The room could be kept warm with the help of a room heater. A wall thermometer gave an idea about the room temperature.

2. Two infant trolleys with plastic tubs on it for keeping the babies.
3. Piped oxygen facility with oxygen points in the warm room and in the labor room.
4. Oxygen tents.

II. In the Labor Room

1. Room heater as a heat source.
2. A trolley with a wooden platform for initial care of a baby including resuscitation, if required.
3. A suction bulb and Laerdal infant bag and masks (00 and 01).

Annexure II—Fiscal Consideration of the Project

(I) Expenditure for upgrading facilities at PHC

1. Piped oxygen installation	Rs. 25,000/-
2. Construction of a warm room	Rs. 17,000/-
3. Trolleys with tubs (3)	Rs. 10,000/-
4. Room heaters (2)	Rs. 800/-
5. Room thermometers (2)	Rs. 60/-
6. Laerdal bag and mask	Rs. 1,800/-
7. Suction bulbs (3)	Rs. 100/-
8. Stethoscopes, feeding tubes	Rs. 250/-
9. Medicines	Rs. 500/-
	<u>Rs. 55,510/-</u>

(II) Expenditure on training

1. One Medical Officer, one LHV one & ANM (per diem and travel)	Rs. 2,000/-
2. Training of Dais	
—Preparation of albums and transparencies	Rs. 1,000/-
—Slide projector	Rs. 2,500/-
—Travel expenses for each Dai at the rate of Rs. 5/- per session	Rs. 2,500/-

3. Payment at the rate of Rs. 5/- for each birth registration on production of foot print	Rs. 3,400/-
	<u>Rs. 11,400/-</u>

(III) *Projected recurring expenditure per year
at PHC*

1. Oxygen, enhanced electrical consumption	Rs. 1,000/-
2. Medicines, feeding tubes, coils of a heater	Rs. 250/-
3. Birth registration	Rs. 3,500/-
4. Travel expenses for Dais	Rs. 2,000/-
	<u>Rs. 6,750/-</u>

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NOTES AND NEWS

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An International Conference on Sleep-Wakefulness is to be held from *September 9-11, 1992* at New Delhi.

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