DEPARTMENT OF PREVENTIVE AND SOCIAL MEDICINE, GOVERNMENT MEDICAL COLLEGE, AURANGABAD (MS)

EVALUATION REPORT OF HOME BASED CHILD CARE PROJECT OF MAHAN TRUST, UTAVALI, TQ. DHARANI, DIST. AMARAWATI

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Background of MAHAN

MAHAN (an acronym for -Meditation, AIDS, Health, Addiction, Nutrition), a non-government organization established in 1998 to improve health care in Melghat region. It was financially supported by Stitchting Geron & Cordaid , Netherland and later on by Govt. of Maharashtra. Some help was provided by Tribal Health Research Project Melghat (Kasturba Health Society , Sevagram.).

Geographic Location:

Melghat region is difficult terrain comprising of hilly forest area in the Satpuda mountain ranges. It is border area of Maharashtra and Madhya Pradesh states.

High under five years children mortality:

This area is known for highest under 5 years children mortality rate (>1000 live births) especially malnutrition related deaths in the state of Maharashtra. The common causes of mortality and morbidity among infants and children are neonatal sepsis, birth asphyxia, low birth weight babies, diarrheal diseases, respiratory tract infections, protein energy malnutrition and malaria. The health care is provided by the Government facilities and private practitioners. The average distance of a village from a private practitioner, medical shop and a district hospital is 19, 28 and 160 kilometers respectively. The primary health care delivered by the Government is provided by paramedic workers and a primary health care centers (PHCs). A single paramedic worker covers a population of 5000 and one PHC with two physicians provides health care to a population of 20,000. There are total 11 primary health centers, 2 rural hospitals & one sub-district hospital in Melghat region. There are two pediatricians who serve in this region and there is no gynaecologist available in this area. Various health programs are implemented by the Government to improve infant and child care in this area and include integrated child development schemes for food supplementation by Self Help Groups (SHGs) and weight record of children immunization, deworming and distribution of oral rehydration solution (ORS) is done by the paramedic workers.

Population coverage:

MAHAN trust implemented 'Home based child care(HBCC) project' in 19 villages (Intervention areas) which had population of 16,396 and 18 villages were taken as control area whose population was 18,731. The villages from intervention area are Ambadi, Baspani, Berdaballa, Bothra, Chitri, Dabiyakheda, Ghota, Hirabambai, Keli, Kharya Tembhru, Kokmar, Kot, Mansudhavadi, Pohara, Tarubanda,

Vision:

MAHAN trust started their work with vision of up-liftment of health status of tribal people.

Infrastructure:

1. **Human resource:**

   There are two specialist doctors (Dr Satav Ashish and Dr. Satav Kavita) available at 24 hours for the management of emergencies and curative care. Other staff members in MAHAN trust are 1 resident Medical officer named Dr Ajay Sadanshiv, 2 staff nurses, 4 supervisors(Medical social Workers) named Mr. Pande Vitthal, Ms. Mandal Kakuli, Ms. Vidya Gondane, servants, watchmen and 19 Arogyaduts selected from intervention areas are Mrs. Kantabai Wankhede, Mrs. Sukrai Jambhekar, Mrs.Urmilla Kasdekar, Mrs. Shamim Shaikh, Mrs. Ramkali Zamarkar, Mrs. Nirmala Dahake, Mrs. Suman Pawar, Mrs. Sumantra Dhande, Mrs. Samoti Kasdekar…

   Funds:

   MAHAN trust's Home based child care programme was financially supported by Govt. of Maharashtra tribal development department. The funds received by MAHAN trust was 32 lakhs for this project.

   Services:

   I) Curative services :

More than 43,904 patients have been treated till now. Mahatma Gandhi Tribal Hospital in Melghat for treatment of serious patients & they managed many (>700) serious patients (e.g. Myocardial infarction, brain hemorrhage, cerebral malaria , meningitis, tetanus etc.) and saved precious lives in their hospital

II) Surgical camps :

a) Operated more than 650 cases with ophthalmic problems like cataract (free of cost - intra-ocular lens implantation) , eye injuries, minor surgeries etc.
b) Plastic surgery camp: 95 cases of post burn contractures, cleft lip, cleft palate ,etc. were operated free of cost in their hospital.
c) Ten cases of Rheumatic valvular heart diseases detected in camp were operated free of cost at Mumbai with the help of G-66 Heart Foundation.
d) More than 10 other general surgical cases have been operated in various hospitals due to efforts taken by MAHAN trust.

III) Specialty camps :

They arranged various specialty diagnostic & treatment camps in Melghat like Gynaecology & Obstetrics , Paediatrics , eye, ENT, pathology , etc. and treated >13200 patients. Detection of Malarial parasite positive patients in the camps activated the government system to intensify malaria control program on massive scale in Melghat .

IV) School health checkup :

Around 14216 students from more than 102 schools were examined & the needy were treated free of cost (especially for eye problems).

V) Anganwadi children health check up:

More than 9000 pre-school children from 37 villages in Melghat were screened & needy were treated . Around 3-10% of children were severely malnourished. With the help of other charitable trusts , they provided nutritious food to more than 300 malnourished babies and mothers for 3 months. Due to their efforts many deaths due to malnutrition were prevented.

VI) Blindness control program:

Mahatma Gandhi Tribal hospital has full time ophthalmic surgeon . More than 360 cataract cases have been operated upon (free of cost) .More than 2840 students & villagers were given spectacles(free of cost for students).

VII) Road traffic accident :

They saved lives of around 16 seriously injured persons in road traffic accidents by rescuing them from accident site in Melghat.

VIII) Door to door screening & treatment of patients:

More than 9375 cases were screened and needy were treated through house to house screening and treated.

IX) Health education programme :

More than 3000 health education programs were organized for more than 53000 people. They prepared one C.D. on Nutrition Health Education in local Korku dialect, which has been highly accepted & appreciated by the villagers. They also prepared one flip chart on nutrition highly appreciated & recommended for government health education program by Dr. Mishra (IAS) , Special Reporter, National Human Rights Commission & Ex-secretary, Union Labor, Ministry, Govt. of India, New -Delhi. Also highly appreciated by Dr. Fernandez, neonatologist and Ex Dean of LTM Medical College, SION.

X) Youth dialogue & health training program

Due to continued efforts of MAHAN trust , government was forced to conduct Mutation(i.e. change of title of land to the existing progeny of the tribal) on massive scale & many poor tribal became legal landowners.

2.Home based childcare project (HBCC)

MAHAN started HBCC in 19 villages with following objectives:

1. To reduce the neonatal mortality rate (NMR) from 54 to 32.4 per 1000 live births in population of 14,120 of project area in Melghat over a period of 3 years.
2. To reduce the infant mortality rate (IMR) from 90 to 58.05 per 1000 live births in population of 14,120 of project area in Melghat over a period of 3 years.
3. To reduce the under 5 children mortality rate (U5MR) from 140 to 72.1 per 1000 live births in population of 14,120 of project area in Melghat over a period of 3 years.
4. To reduce the prevalence of severe malnutrition (PEM) from 9% to 5.85%

Later on 3 villages were dropped due to frequent change of health workers.

Study Team:

The study team comprised of a principal investigator, one project director, one project manager, two medical supervisors-one physician and one Auxiliary nurse midwife , one nutrition supervisor-MSW, one kitchen garden supervisor and two vital statistic supervisors to monitor and train VHW for all concerned activities**.**

The baseline phase of the study was from January 2004 to April 2005. In this phase they obtained community consent in each of the 38 villages in the field research area of MAHAN for study. Village women with 5–10 years of school education who were willing to work were chosen by the Gramsabha (village council) and their committee as village health workers (VHW) from these 38 villages. To collect prospective data of vital statistics and weight record of children). Female village health workers did census and baseline survey of live birth, neonatal deaths, infant deaths and obtained demographic information in the field research area between January 2004 to April 2005. Male surveyors conducted a retrospective survey in 2005 to confirm findings of VHWs and to find out missed vital events by the VHWs. They also collected baseline data from January 2004 to April 2005. To ensure that no events were missed in the study area, they also collected information from the Government. paramedical workers and confirmed those events. Live births, neonatal deaths, and infant deaths were defined according to the International Classification of Diseases (XX). Still birth was defined as birth of a dead foetus with a gestation period of 28 weeks or more. From January 2005 to April 2005, the female VHWs from the intervention area were trained to take histories of post-neonatal sick children, examine them and provide treatment for acute respiratory infections (ARI), diarrhea and malaria. They were also trained to determine signs and causes of malnutrition.

The intervention phase was divided into various sub-phases and included a) post-neonatal disease management from May 2005 to October 2006, b) normal and high risk neonatal care from November 2006 to April 2007, c) neonatal sepsis and birth asphyxia management and intensive health and nutrition education from May 2007 to April 2008 and d) kitchen garden and personal hygiene education from May 2008 onwards (Figure 2). (The baseline data collection for kitchen garden was done from January to April 2008) The details of these phases are as described subsequently. For the disease management, the interventions were planned in a sequential manner to initially train village health workers a simpler task of managing diseases of children older than 28 days. Management of neonatal sepsis followed this and birth asphyxia, which requires advanced skills such as use of Ambu bag and intramuscular injections. Scheduling the interventions in a sequential manner also allowed us to measure the impact of each intervention on child mortality. Furthermore, this study allowed us to test the practicability of such a staggered approach to train village health workers to manage childhood diseases of increasing complexity, so that this approach can be replicated in other tribal areas.

The post-neonatal care disease management included treatment of ARI, diarrhea and malaria. During the normal and high risk neonatal care phase of the study, VHWs listed pregnant women in the village. VHWs made home visits in the third trimester, observed labour and neonates at birth, visited the home on days 1, 2, 3, 5, 7, 14, 21, 28, (total 7

visits for normal neonates) and on any other day if the family called, to take history, examine mother and child, weighed the child each week, and managed minor illnesses and pneumonia in the neonates and recorded the data. They followed up the neonates for 28 days after birth, until the mother left the village, or until the neonate died, whichever was earlier. For high risk babies, 13 visits were conducted.

The next phase included management of neonatal sepsis and asphyxia and was described under the case management section. The intensive health and nutrition education part of this phase included providing malnutrition education with the help of flip charts and an audiovisual CD to women in the villages. The education addressed care and nutrition during pregnancy, initiating early and exclusive breast feeding, complementary feeding, infant and young children feeding practices (locally available, home made, safe food), prevention of infection, temperature maintenance, importance of weight gain, growth chart, recognizing danger signs or symptoms in neonates, and seeking immediate help from a health worker.

During the fourth and the last phase of the study, educating families about a kitchen garden, personal hygiene with hand washing and nail cutting was started in the intervention villages. As malnutrition is one of the major causes of morbidity and mortality in this area, we analyzed the causes of malnutrition. We found that lack of awareness regarding nutrition and hygiene, lack of nutritious food even when a family typically owns one or two acre of lands, unhygienic feeding practices like feeding without washing hands and unclean nails were major preventable causes of malnutrition. To address these issues we prepared flipcharts with mostly local photographs to educate the population about the widely prevalent problem of malnutrition. The nutrition supervisor regularly taught children to wash hands with soap or fresh ash (readily available in the kitchens of tribal homes) before feeding and demonstrated nail cutting.

An agriculture expert who has a Master's degree in agriculture technically guided the kitchen garden project. Although most of the families owned a small piece of land they were unaware of proper method of cropping with available resources. This leads to insufficient quantity of food production, lack of proteins and vegetables in the diet. Hence we decided to demonstrate that one acre of land is sufficient to provide sufficient nutrition to the children and tackle the problem of malnutrition in long term. The wastewater from kitchen was utilized for irrigation of the kitchen garden. This was also expected to solve the problem of water logging which leads to breeding of mosquitoes and flies thus reducing the incidence of malaria and diarrheal diseases. The kitchen garden was also expected to increase the quantity, quality of food production as well as change the tradition from mono-cropping pattern to multiple cropping patterns. Being organic way of farming without chemical fertilizers and pesticides, this will reduce the production cost and increase the fertility and quality of land in long term.

Case management:

The case management of neonates was done as described in details by Bang et al. Briefly, the VHWs were issued with a care kit (the contents of the kit are as described in the appendix) and trained to diagnose and manage neonatal disorders. Birth asphyxia was diagnosed at 30 second or 1 min after birth, and managed by clearing mucus with an oral mucus sucker with mucus trap (Romsons, India) and tactile stimulation. If necessary, artificial respiration was provided by tube and mask (Phoenix Medical Systems, Chennai, India). Birth weight was assessed within 6 h of birth by hand-held spring weighing-balance (Salter, UK). Neonates with gestation of less than 37 completed weeks (calculated from the last date of menstruation), or those with birth weight below 2000 g were judged high-risk babies. These babies were managed by maintaining temperature, frequent breast feeding, Kangaroo mother care, preventing recurrent handling by different people and 13 home visits. Temperature maintenance was ensured by keeping the room warm in winter, by drying the baby immediately after birth and covering in multilayered cloth, by use of head cover and baby clothes, and by wrapping the baby in a blanket in winter. Neonates' axillary temperature was measured by VHWs using digital thermometer (Sakura, Japan). High-risk babies or babies with hypothermia (temperature <95°F or 35°C) were kept in sleeping bags or blankets after initial warming with heated cloth. Fever (>99°F or 37.2°C) was treated with oral acetaminophen. Health workers and birth attendants encouraged mothers to start breast-feeding in the first hour after birth and continue exclusive breastfeeding on demand. If the baby was unable to breast feed, expressed breast milk was fed by paladin spoon. Health workers managed inverted nipples or painful breasts and breast pump was used if needed. Breast milk, if inadequate, was supplemented by sheep's milk or cow's milk fed by spoon. To prevent umbilical cord infection, hand washing, cord cutting with a clean blade, and tying with clean thread (by traditional birth attendants), and applying gentian violet to the umbilical stump was

encouraged. Traditional birth attendants and village health workers placed chloramphenicol ointment or gentamicin eye drops in the eyes of all babies, encouraged skin hygiene, and applied 1% gentian violet for pyoderma or intertrigo. Village health workers gave an injection of vitamin K 1 mg to each baby using dispensable insulin syringe. We used the term neonatal sepsis (XX) collectively for septicaemia, meningitis, or severe pneumonia, (XX) diagnosed clinically. Simultaneous presence of any two of the following criteria denoted sepsis: baby's cry became weak or abnormal or stopped; baby stopped sucking or mother felt that sucking definitely became weak or reduced; baby became drowsy or unconscious; skin temperature more than 99°F (37.2°C) or less than 95°F (35.0°C); purulent discharge from umbilicus; diarrhoea or persistent vomiting or distension of abdomen; grunting or severe chest indrawing; respiratory rate 60 or more per min in a quiet baby even after two counts. From May 2007, the VHW were trained for recognition and management of neonatal sepsis. Gentamicin (5 mg once a day for 10 days for preterm babies with birth weight <2000g; 7 mg once daily for birth weight 2000 to 2500 gm or as per gentamicin chart once daily for 7 days for full-term babies or those with birthweight >2500g) was given by intramuscular injection with disposable insulin syringes (40 units/mL) over antero-lateral aspect of the thigh. Syrup co-trimoxazole (sulphamethaxozole 200 mg, trimethoprim 40 mg/5 mL) 1.25 mL was also given twice a day for 7 days for normal babies and for 10 days for premature babies. .

For the post-neonatal case management children were identified as having ARI or diarrhea according to WHO definition. Malaria was diagnosed by history of fever with chills and without evidence of other diseases. ARI was treated with co-trimoxazole syrup (2.5 ml BD for age group 1 to 2 months, 5 ml BD for age group 2 months to 1 year, 7.5 ml BD for age group 1 year to 5 years)or tablet (1,2, 3 for age groups 1 to 2 months, 2 months to 1 year, 1 year to 5 years) for 5-7 days, diarrheal illness was treated with ORS (prepared in our hospital with added nutmeg and cardamom which increased the palatability, effectivity and acceptability), furoxone (for non responding cases or with blood in stool-5 ml 8 hourly for 3 days) and metronidazole syrup (for dysentery-5 ml 8 hourly for 7 days)-----and malaria was treated with-(Syrup chloroquine –for 1 month to 1 year- 5 ml first dose , 2.5 ml after 6 hours, 2.5 ml after 12 hours , 2.5 ml after 12 hours. for 1 year to 5 years - 10 ml first dose , 5 ml after 6 hours, 5 ml after 12 hours , 5 ml after 12 hours. Syrup paracetamol was given 2.5 to 5 ml 8 hourly depending upon the body weight

After training, the village health workers were assessed, and on reaching a satisfactory competence (evaluated by experts from SEARCH) they started treating sepsis at home from May 2007. The trial did not provide for any referral care to neonates apart from that already available at government hospitals. The family was free to seek care from other sources as well. The rate of hospital admission was recorded.

A physician trained in homeopathic medicine and a pharmacist (both trained for supervision of VHS by SEARCH) visited each village once every 2 weeks. The physician verified the data recorded by the village health workers, corrected and educated them. Both homeopathic physician and pharmacist verified the drug stock record. The physician provided no treatment. If a neonate was found seriously ill, hospital admission was recommended, but the final decision was left to the family. Records of the neonates in the intervention area who were attended by the female village health-workers but who died, were reviewed by an independent physician, who assigned cause of death by use of criteria similar to those used by the expert group of the National Neonatology Forum of India. The primary cause of death included prematurity, low birth weight babies, birth asphyxia, neonatal sepsis, breast feeding problems, ARI, Malaria, diarrhea, malnutrition, other (eg, malformations, hypothermia, tetanus), and cause not known. Recording of births and child deaths was done during 2004–08 by independent set of workers in the intervention and the control areas. Besides prospective reporting by VHWS, they undertook a house-to-house survey in both areas, once every 6 months, to detect any missed events. Births and neonatal deaths were counted in the village where they actually occurred. If a hospital-born neonate was brought to a village, it was included. Similarly, if an ill neonate from the area was admitted to hospital and died there, the death was included. Costs (training, equipments, wages and incentives, medicines and supplies, records, supervision and transport) were recorded.

GANTT CHART:

Sr.No.	Activity	Full implementation Phase 36 months May 2007-April 2010.
1	Preparation and finalization of contract. Funding agency	·
2	Appointment of project manger & trainer-supervisor	Done
3	Orientation of project manger/ NGO head	Done
4	Community consent contact(Monthly meeting)	· …… ….
5	Preparation of micro plan	Done
6	KAP study	…
7	Training of supervisor(peer visit learning for supervisor at SEARCH, Gadchiroli)	
8	Selection of VHW	Done
9	HBNC Training of VHW and supervisor, Revision training	· · · · · · · ·
10	TBA cooperation	· · · · · · ·
11	Intervention villages identification	Done
12	Field work of VHW	· ·
13	Full implemention of HBNC	· ·
14	TBA training	· · ·
15	Community contact	……
16	Data collection Vital statistics MIS Newborn form data.	…… · · · · ……
17	Evaluation by SEARCH, Gadchiroli End of Training Review Visit.	· · · ·

3. Methodology for evaluation and the rationale

MAHAN trust contacted Department of Preventive and Social Medicine, Government Medical College, Aurangabad to conduct evaluation of their programme on HBCC.

Objectives of the programme as spelt out by MAHAN are:

1) To reduce the Neonatal mortality rate (NMR) from 54 to 32.4 per 1000 live births in population of 14,120 of project area in Melghat over a period of 3 years.
2) To reduce the Infant Mortality rate (IMR) from 90 to 58.05 per 1000 live births in population of 14,120 of project area in Melghat over a period of 3 years.
3) To reduce the under 5 children mortality rate (U5MR) from 140 to 72.1 per 1000 live births in population of 14,120 of project area in Melghat over a period of 3 years.
4) To reduce the prevalence of severe malnutrition (PEM) from 9% to 5.85%

Primary discussion was done regarding evaluation work by Dr.J.V.Dixit, Associate Professor, Department of Preventive and Social Medicine, Government Medical College, Aurangabad with Dr. Ashish Satav of MAHAN trust at Karmgaon, Utavali village. They finalized the methodology for evaluation taking into account the purpose of evaluation and the available resources.

Following activities were planned to evaluate the programme:

1. Cross verification of all deaths and births from two randomly selected villages from intervention area and two villages from control area.
2. Cross verification of health package delivery from intervention area
3. To assess KAP of VHW (Arogyadoot) regarding weight recording, health education and health package
4. Focussed group discussion among VHWs
5. Interview with three Medical Officers, four NGOs, AWW, CDPO, ADHO from same area to know their views about work of MAHAN trust.
6. Verification of records related to accounts

The field area of MAHAN trust comprises of 35 villages, 16 from intervention area and 19 villages from control area. Two villages each from control area and intervention area were selected randomly by lottery method. Control area villages were Bhiroja and Kara. Study area villages were Didamdal and Keli. Dr.H.A. Khadilkar, lecturer and Dr.V.K. Domple, Dr. S.B Patil., Dr. R.H. Dandekar all post-graduate students from Department of Preventive and Social Medicine, Government Medical College, Aurangabad visited above mentioned villages for collecting information about births and deaths by house to house survey using pre-tested questionnaire. They also collected information about health package delivery for mothers of babies by using pre-tested pre-designed questionnaire. ***The rationale for this house-to-house survey was to find out whether there is any discrepancy between records of births and deaths documented by the VHWs of MAHAN and the births and deaths actually verified by the evaluation team. This study was very crucial because it was going to decide about the authenticity of data generated by MAHAN. As the evaluation team was not in a position to actually gather data related to births and deaths before the programme was implemented and also due to logistic limitations it was not possible to collect this data after 3 years of implementation of HBCC programme by doing house to house survey of all 35 villages.***

Investigators asked VHWs to demonstrate weight-recording procedure of babies. With the help of questionnaire VHWs knowledge regarding neonatal care, immunization, growth and development was assessed. During house-to-house survey, mothers were asked about health package given by MAHAN trust. The evaluation team arranged focussed group discussion among VHWs to get qualitative data related to their experiences, achievements and to document certain case studies. The financial records of MAHAN trust were checked randomly of a few months during the evaluation work. The

team interviewed three Medical Officers, representatives of four NGOs, AWW, CDPO and ADHO from same area to know their views about work done by MAHAN trust.

The data collected was tabulated and analyzed by using standard statistical software, epi_info 6.0.

4.Observations and Discussion

A. Observations related to various death rates

1. Table showing cross verification data of four villages (Keli, Bhiroja, Didamda and Kara)

Sr No & description	Numbert found by MAHAAN trust	Number found by Evaluation team
1. Births	**20, 26, 21, 33 = 100**	**20, 26, 21, 33 = 100**
2. Deaths	**4, 2, 3, 2 = 11**	**4, 2, 3, 2 = 11**

As per the cross verification of births and deaths in four villages was concerned, there was no difference found in the figures given by MAHAN trust and house to house survey done by evaluating team. So the methodology adopted by MAHAN Trust for recording births and deaths seems to be correct.

2. Baseline data collected by MAHAN trust during 1st January to 31st December 2004 is as follows:

Indicators	Baseline data 1st January to 31st December 2004.	
	Intervention Area	Control Area
SBR (per 1000 live births)	50.54	19.34
NMR (per 1000 live births)	50.93	57.19
IMR (per 1000 live births)	94.9	72.97
U5MR. (per 1000 live births)	143.52	102.56

SBR: Still Birth Rate, NMR: Neonatal Mortality Rate, IMR: Infant Mortality Rate, U5MR: Under 5 Mortality Rate IA: Intervention area. CA: Control area

3. Data collected by MAHAN trust during 1 may 2008 to 30 April 2009) is as follows:

Intervention area

Live Births	412
Still birth	8
NMR	26.69903
IMR	43.68932
U5MR	63.1068
SBR	19.04762
Neonatal deaths	11
Infant deaths	18
Under 5 children deaths	26

Control area

Live Birth:	497
Still birth	9
NMR	56.33803
IMR	70.42254
U5MR	84.50704
SBR	19.27195
Neonatal deaths	28
Infant deaths	35
Under 5 children deaths	42

4.(a) Neonatal Mortality Rate in control area

Baseline	After	Difference
57.19	56.33	0.86

4. (b) Neonatal Mortality Rate in intervention area

Baseline	After	Difference
50.93	26.69	24.24

4 .(c) Comparison between difference in neonatal mortality in control and intervention area

Difference in control area	Difference in intervention area
0.86	24.24

(Z=2.67; P<0.05)

So difference in reduction of neonatal mortality rate in control area and that of intervention is statistically significant.

Objective was to reduce Neonatal mortality rate (NMR) from 54 to 32.4. It is evident from table no. 4.b that it has been reduced to 26.69 per 1000 live births which is beyond the objective set by MAHAN Trust. Contrary to this the NMR in control area has reduced only marginally to 56.33 per 1000 live births.

5.(a) Infant Mortality Rate in control area

Baseline	After	Difference
72.97	70.42	2.55

5.(b) Infant Mortality Rate in intervention area

Baseline	After	Difference
94.9	43.68	51.22

5.(c) Comparison between difference in infant mortality in control and in intervention area

Difference in control area	Difference in intervention area
2.55	51.22

(Z=6.484; P<0.01)

So difference in reduction of infant mortality rate in control area and that of intervention is statistically highly significant.

Objective was to reduce infant mortality rate (IMR) from 90 to 58.05 per 1000 live births. It is evident from table no. 5.(b) that it has been reduced to 43.68 per 1000 live births which is beyond the objective set by MAHAN Trust. Contrary to this the IMR in control area has reduced only marginally to 70.42 per 1000 live births. It is also observed that in control area the base line IMR was low compared to the intervention area. Such difference poses a question on the comparability of the villages put in control and intervention groups.

6.(a) Under Five Mortality Rate in control area

Baseline	After	Difference
102.56	84.50	18.6

6.(b) Under Five Mortality Rate in intervention area

Baseline	After	Difference
143.52	63.10	80.42

6.(c) Comparison between difference in Under Five Mortality Rate in control and intervention area

Difference in control area	Difference in intervention area
18.6	80.62

(Z=6.484; P<0.01)

So difference in reduction of under five mortality rate in control area and that of intervention is statistically highly significant.

Objective was to reduce Under Five mortality rate (U5MR) from 140 to 72.1, it is evident from table no. 6.(b) that it has been reduced to 63.10 per 1000 live births which is beyond the objective put by MAHAN trust.

From above discussion, it seems that the first three objectives have been achieved completely. There is a statistically significant difference between the reduction in various death rates between control area and the intervention areas. However the base line IMR and U5MR of the control area is 72.97 and 102.56, which is much less than respective rates of 94.9 and 143.52 in intervention area. Such a difference poses a question about comparability of both the areas

As far as the second objective was concerned, it was difficult to evaluate. The reasons were multiple. Firstly it was practically impossible to weigh all under five children in all villages by going house to house. Secondly evaluation team had to rely upon data provided by the trust regarding the prevalence of severely malnourished children in the project area at the commencement of HBCC programme. Hence the technique of weighing was observed while the Arogyadoot was actually weighing 4-5 children in the selected villages and at the same time

VHW was asked about her knowledge. It was found that the Arogyadoots were weighing the children correctly and they also had satisfactory knowledge regarding nutrition, malnutrition and growth monitoring.

B. KAP OF VHWs (Arogyadoots)

Table No. 1 Distribution of Arogyaduts according to age group

Age group	No. of Arogyaduts
20-30	9 (60%)
31-40	3 (20%)
41-50	2 (13.3 %)
>50	1 (6.7%)
Total	15

Most (60%) of the Arogyaduts were from younger age group i.e. 20-30 years of age.

Table No. 2 Educational status of Arogyadoots

Educational status	No. of Arogyadoots
Illiterate	2 (13.3%)
< 7^{th} std	2 (13.3%)
>= 7^{th} std	11 (73.3%)
Total	15

Most (73.3%) of the Arogyaduts were educated up to 7^{th} std and above.

D. Results of Focus group discussions of various groups

Arogyadoots

On 19th May 2009, Evaluation team conducted focus group discussion with all Arogyadoots and Supervisors of MAHAN trust. Dr. Khadilkar, team leader initiated the discussion so as to know about their work experiences, any great achievements or any obstacles. Some Arogyadoots and Supervisors told their experiences as given below:

- **Mrs. Kantabai Wankhede,** Arogyadut of Chitri Village, has told that her village ANM was not willing to give births and deaths data. In this case, Dr. Satav helped her for getting the data from ANM. While discussing about her experiences and achievement, she told that she resuscitated premature baby of 8 months gestation, as baby did not cry after the delivery. A woman delivered a baby in bus; she conducted delivery and provided neonatal care. She thinks because of this, opinion of villagers has changed about her.
- **Mrs. Sukrai Jambhekar**, Arogyadut of Mansudhavadi village, told that she not only conducted normal deliveries but also breech presentation. She resuscitated asphyxiated baby with help of infant mucus sucker and Ambu bag. She told that her village ANM was uncooperative for providing malnutrition data. Dr. Satav solved this problem by calling Gramsabha. Now Arogyadut and ANM are working together.
- **Mrs.Urmilla Kasdekar,** Arogyadut Bedadavallah village, on 18 Dec 2008, shared a very good experience of her. She told in her village one PNC mother had problem of lactation after delivery so she has motivated another PNC mother to breastfeed the baby. She motivated the lady by giving example of Yashoda mata.
- **Mrs. Shamim Shaikh,** Arogyadut of Hirababmbai, told that she treated the retracted nipple with piston and massage. She narrated her experience regarding a baby of 1.5 Kg, who lost his weight upto 800 gm within a few days, she had given Inj. Vit. K and advised about exclusive breastfeeding and maintenance of hygiene. Now after 2 years, weight of that baby is 9 Kg.
- **Mrs. Ramkali Zamarkar,** Arogyadut of Ambadi, expressed her experiences that relatives of a pregnant lady who was suffering from eclampsia, were not willing to admit her in hospital due to superstitions. She has motivated them for admission at RH, Dharni. This case was referred to district hospital, Amravati where she delivered a baby. Though baby died, life of mother could be saved due to timely referral.
- **Mrs. Nirmala Dahake,** Arogyadut of Baspani village, told that she treated a baby who was suffering from pneumonia with symptoms of high-grade fever, breathlessness. She advised to take treatment from hospital. But relatives were reluctant to admit in hospital. She treated baby with wet mopping, Tab. Cotrimaxazole, Tab. PCM after taking written consent and baby recovered from infection.
- **Mrs. Suman Pawar,** Arogyadut of Bothra village, told that she resuscitated a baby who was not crying after birth. She told she treated a mother with retracted nipple with piston and helped to feed the baby. She also treated a case of breast engorgement with hot massage.
- **Mrs. Sumantra Dhande,** Arogyadut of Pohara village, told that she did not receive co-operation from Govt. health services staff and support of villagers was also weak. Still she is working with these obstacles. She narrated an example of timely referral and admission of high-risk lady with twins.
- **Mrs. SamotiKasdekar,** Arogyadut of Kharyatembharu village, has told that she resuscitated the low birth weight baby of approximately 800 gm with mucus sucker and Ambu bag and saved the baby.

All Arogyadoots have elaborated about all aseptic precautions taken before giving injection Vit. K. They knew about neonatal resuscitation and about home visits for ANC, PNC and neonates.

Supervisors:

- **Dr. Sadanshiv Ajay,** helped to minimize early neonatal deaths by giving early home visits.
- **Mr. Pande Vitthal,** is **working** since 2005, he said he is regularly organizing Gramsabha in all adopted villages. He gave continuous medical education to Arogyadoots viz. safe injection practices, aseptic precaution before any invasive procedure; home visits to ANC, PNC and neonates etc. He is also involved in the counselor programme.
- **Ms. Mandal Kakuli,** is working since 7 months in 9 intervention villages in Home based Child care project. She helps Arogyadoots in keeping all records updated and she supervises work of VHW.
- **Ms. Vidya Gonde,** is working since 7 months in 9 intervention villages of Melghat area. She has given some suggestions that working staff should be increased and training of VHWs should be increased.

E. Observations related to interviews of stake holders

Interview with ANM:

- **Mrs. Muley V.R**. ANM, Subcenter- Keli, she was working since 3 years at this center. She said that Arogyadoots were supportive in the field.

- **Mrs. Jaiswal Chhaya,** AWW, Subcenter –Keli, she is working since 1986. She knew about MAHAN trust. She also knew Mrs. Baithekar (Arogyadut of Keli village) and her work. Her opinion about their work was good. She is working with her. *She said that supervisors of MAHAN trust complained against her to higher authority about her absentees.* The reason told by her about absentees was urinary colic.

Interviews with Medical Officers:

- **Dr. Jadhav,** In charge medical officer, PHC-Kalamkhar, Dist. Amravati**,** Since 6 years, he was working as in charge MO at this center. He expressed his views about MAHAN trust that the working of this trust was good but there was no co-ordination between AWW, ASHA, VHG, and Arogyadut. He has given some suggestion that there should be coordination of work that means one should avoid the duplication of work.
- **Dr. Panchal,** Medical officer, PHC-Kalamkhar, Dist. Amravati. Since 1 year, he was working as MO at this center. He said that there was communication gap between NGO and Government health system. There was duplication of work. Both system were doing same work.
- **Dr. Parde**, Medical officer, PHC- Sadrabadi, Dist. Amravati, he was knowing about MAHAN trust, it's VHW, Arogyadut. According to him, work of MAHAN trust was satisfactory. Counselors were not working in the field. When asked about his experience about Arogyadut, he quoted one example where life of one newborn can be saved by resuscitation given by Arogyadut and use of Inj. Gentamycin to that newborn child in Ambadi and Hirabambai)village.
- **Dr. Deshmukh Pranali,** Medical officer, PHC- Seemadoh, Dist. Amravati. She said that though she did not know the name of trust runned by Dr. Satav but she knows the work done by him.

Interview with Assistant CDPO:

- **Mrs. Salame,** Assitant CDPO, Dharni, She was working since 9 years at this center. She said that NGO were helpful to government system. She told that at some places there is good coordinated work between and government system. In her opinion cases of malnutrition should be admitted at MAHAN trust hospital for better treatment.

Interview with ADHO:

- **Dr. Bobde,** ADHO, Amravati, he said that NGOs are acting as watch dogs on government system. They not only help government system in running different national health programme but they also give some innovative ideas to solve health related problems. He said he is taking help of MAHAN trust in containing problem of malnutrition and reducing infant mortality. He appreciated the work done by Arogyaduts in interventional areas. He did not forget to trace that coordination between government system and NGOs should be strengthen through regular meetings and combined training.

Interviews with NGOs:

Eminent personalities from Melghat area working in this area from last 10-15 years for the upliftment of the tribal community were also interviewed during the evaluation. These included following persons:

1. **Dr. Ravi Kolhe**
2. **Mrs. Deshpande,** Sampoorna Bamboo Kendra
3. **Mr. Ghodeswar Ranjit,** Co-ordinator, Koshish
4. **Dr. Sawji Avinash,** Prayas-Sewankur
5. **Mr. Bandu Sane,** Khoj
6. **Brother Nikku,** MCWC, Kurumkot

While discussing the issues related to tribal community in Melghat area, almost everyone accepted that the problem of malnutrition is to be handled through multi-pronged approach. They said government has focused its attention towards this problem and showing its concern by providing funds through different governmental schemes to this area. But the problem is poor and illiterate tribal are unaware about most of these schemes. So there is urgent need to educate and make these tribal aware about the facilities made available to them through government. Regarding the health issues of tribal with special reference to infant mortality and malnutrition, they suggested that local tribal people should be taken into confidence prior to implementation of any health intervention. As far as possible the local tribal should be educated and trained regarding health intervention. This will help to build confidence in tribal regarding health services and these locally trained health activist will also try to reduce the existing superstitions in this community. They also recommended restructuring of catchments area of the primary health centers in Melghat area and need for dividing larger PHC's in smaller ones as per Health for All 2000 A.D. criteria as laid down for tribal area.

They appreciated the work done by Dr. Ashish Satav and Dr. Kavita Satav through MAHAN trust. They congratulated Dr. Ashish Satav for choosing such a difficult path to serve this tribal community. They said dedication, hard work and simplicity shown by Dr. Satav couple is exemplary.

All these renowned personalities appreciated the 'Arogyadoots' concept implemented through MAHAN trust for 'Home-based child care'.

F. Observations related to documentation of work of MAHAN

Letter from **Mr. V. Ramani**, Director General, Rajmata Jijau Mission, Aurangabad(Govt. of Maharashtra) to Dr. Satav, president, MAHAN trust could reveal that the work done by Dr. Satav through MAHAN trust in remote tribal area of Maharashtra (Melghat) is really inspiring and appreciable. Government and non-government organization should support and participate in his activities whole heatedly. Mr. Ramani congratulated Dr. Satav for his efforts taken for reducing the child mortality and malnutrition. **Dr. D.C. Athwale**, Civil Surgeon, Amravati had also acknowledged the work done by MAHAN trust in the Melghat area for reducing malnutrition and improving tribal health. He requested Dr. Satav couple to work in Government hospital on contractual basis. **Mr. Sunil Limye**, Additional Commissioner, Tribal Development, Amravati had highly appreciated the Arogyadut concept. He gave the example of Hirabambai village where health worker, Mrs. Shamim Shaikh had saved the life of premature baby of 800 gm through Home based child care concept.

Minutes of meetings held under the Chairmanship of **Secretary and Commissioner (Family Welfare), Mumbai,** revealed that Dr. Satav was one of the honorable representatives from NGOs and his suggestions regarding training of ASHA, Counselors scheme evaluation were taken on record. Secretary and Commissioner (Family Welfare), Mumbai, directed government officials to prepare action plan on his suggestion.

G. Accounts verification

The financial records of MAHAN trust were also checked randomly of few months during the evaluation work. The record was kept in good condition and in systematic way. The work schedule prepared by the trust and plotted on GANTT chart was found to be progressing as per the time schedule.

- Human resources enrolled in MAHAN trust was checked by verifying records and it was found to be satisfactory.
- The project work schedule was found to be progressing as per the GANTT chart prepared by the trust initially.

Funds: Total grants sanctioned by Govt. of Maharashtra to MAHAN trust for 'Home based child care project' was 32 Lakhs for the period 2007-2010. Out of which 3094004.38 Rs. was spent on this project during 2006-2007, 2007-2008 and 2008-2009. Documents showed that there was 105995.62 Rs. in balance with MAHAN trust on 31.03.2009. Again records revealed that 100000 Rs. were shown in expenditure in the month of April 2009. So on 30.04.2009, there was 5995.62 Rs. balance with MAHAN trust.

Conclusions

1. HBCC Package by MAHAN has definitely reduced various mortality indicators and malnutrition.
2. If implemented methodically the project appears to have potential to get replicated on large scale.
3. MAHAN trust has been successful in making available the HBCC package to the families in need and its proper utilization.
4. Village Health Workers (Arogyadoots) are highly motivated instead of their low educational level. Their work was satisfactory. For any organization to have such a committed workforce should be a matter of pride.
5. Knowledge of VHW about prophylaxis against anemia, blindness and immunization was found to be comparatively poor. There is still scope for educating VHWs on these important issues.
6. There had been regular and frequent trainings of VHWs
7. Monitoring by supervisors was found to be satisfactory.
8. The focused group discussions with VHWs and supervisors provided qualitative data which may act as motivating factors for other staff too.
9. The record was kept in good condition and in systematic way.
10. Almost all stakeholders including Medical Officers, N.G.O.s, C.D.P.O and A.D.H.O appreciated work done by MAHAN during interviews. Many of them stressed on need of having more coordination and communication between NGOs and govt. system.
11. Duplication of work and lack of coordination were the two important issues of concern on which the MAHAN trust should take initiative in future.

Limitations

1. This is post-interventional study. We were not in a position to collect the baseline data. Also it was not possible to collect data from all villages under the project by house-to-house survey after the implementation of HBCC due to constraints of resources. So we relied upon indirect methods to evaluate the first three objectives. The evaluation is likely to have all drawbacks of this methodology.

2. Evaluation work was mainly based on random sampling and results of the evaluation were drawn from the villages which were chosen randomly from the project area. There is possibility of sampling variations in variables studied.

3. It was not possible to take anthropometric measurements for evaluating malnutrition. Hence the objective of reducing prevalence of malnutrition could not be studied

4. There is a possibility of spilling over effect as the villages in control and intervention areas were nearby.

5. Recall bias might have played role while collecting the data regarding health packages and other qualitative data from the service providers as well as beneficiaries.