About the American India Foundation
The American India Foundation is committed to catalyzing social and economic change in India, and building a lasting bridge between the United States and India through high-impact interventions in education, livelihoods, public health, and leadership development. Working closely with local communities, AIF partners with NGOs to develop and test innovative solutions and with governments to create and scale sustainable impact. Founded in 2001 at the initiative of President Bill Clinton following a suggestion from Indian Prime Minister Vajpayee, AIF has impacted the lives of 3.7 million of India’s poor. Learn more at www.AIF.org

About the Maternal and Newborn Survival Initiative
Maternal and Newborn Survival Initiative (MANSi) is a public–private partnership seeking to reduce maternal and child mortality by providing care, resources, and support to empower local communities to care for their mothers and children and improve local health systems.

Credits

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Cover Credit: Mukhi Soren with her newborn child, covered under AIF’s MANSi program. Poradih Village, Seraikela, Jharkhand.

Photographs © Prashant Panjiar. Pages 18-19, 40-41 from AIF archives

Reference to generic names of pharmaceutical drugs and processes does not imply their endorsement by the American India Foundation, and any failure to mention a particular drug or process is not a sign of disapproval.
Foreword

Despite significant advances, India continues to be challenged by a huge burden of preventable deaths among children and mothers. Indeed, India has embraced the international community’s UN Sustainable Development Goals of 2030, and an important aspect of these goals is the significant reduction of child and mother deaths. Since 2011, the Government of India has started to implement home-based neonatal care (HBNC) that was pioneered by the Society for Education, Action and Research, an NGO with the acronym SEARCH. SEARCH has demonstrated through its Gadchiroli Trials (1993–1998) that a large proportion of newborn deaths (more than 70%) are preventable through well-trained community health workers applying simple low-cost yet effective technologies and home-based child care practices.

The desire to demonstrate the impact of the HBNC strategy at full scale was embraced by a unique partnership that brought together the Government of Jharkhand, the Tata Steel Rural Development Society (TSRDS), SEARCH Gadchiroli, and the American India Foundation (AIF). The partnership has been strengthened by the contributions of its partners—AIF committed to the development of marginalized populations; TSRDS committed to the development of people living in areas surrounding their operations; and SEARCH to expand the spread of its HBNC model for reducing neonatal mortality and morbidity across all of India and worldwide.
The partners pooled their resources and implemented the Maternal and Newborn Survival Initiative (MANSI) deploying the new HBNC approach in one of the most disadvantaged communities in Jharkhand’s Seraikela block which contains a population of 81,000. The fact that the Jharkhand had already launched the National Rural Health Mission meant that community health workers (called ASHAs or Sahiyyas) were already situated and funded in Jharkhand. Needed was the catalytic support of partners through training and reinforcements to prevent large numbers of child deaths.

This report documents the evaluation of the MANSI project (2009–2014), especially of the HBNC services provided by ASHAs or Sahiyyas. Several quantitative and qualitative methods were deployed to assess improvements in child mortality, worker capacities, as well as program management. The results over five years of the project speak for themselves—across the board reductions of child mortality (neonatal mortality 46%; infant mortality 39%, 1–4 year mortality 62%, and under-5 mortality 44%). Although MANSI did not measure a comparable control population, it has compared the significant improvements both over time as well as with overall statistics for Jharkhand. The project aims to propagate the HBNC strategy to the rest of Jharkhand as well as nationally.

MANSI project provides a successful example of how the public sector, the corporate sector, civil society and a technical organization can come together to address a key national health problem. Especially noteworthy is how the government’s own program and workers benefitted from both the non-profit private sector (SEARCH and American India Foundation) and the for-profit sector (Corporate Social Responsibility by the Tatas).

Lincoln C. Chen MD, MPH
President
CMB USA
Acknowledgments

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Consultant
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### Abbreviations and Acronyms

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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIF</td>
<td>American India Foundation</td>
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<tr>
<td>ANM</td>
<td>Auxiliary Nurse Midwife</td>
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<tr>
<td>ASHA</td>
<td>Accredited Social Health Activist</td>
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<tr>
<td>CF</td>
<td>Case Fatality</td>
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<tr>
<td>CHW</td>
<td>Community Health Worker</td>
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<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
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<tr>
<td>ENMR</td>
<td>Early Neonatal Mortality Rate</td>
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<tr>
<td>FBNCC</td>
<td>Facility Based Newborn and Child Care</td>
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<tr>
<td>FGD</td>
<td>Focus Group Discussion</td>
</tr>
<tr>
<td>GoI</td>
<td>Government of India</td>
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<tr>
<td>GoJ</td>
<td>Government of Jharkhand</td>
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<tr>
<td>HBMNCC</td>
<td>Home-Based Maternal, Neonatal and Child Care</td>
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<tr>
<td>HBNC</td>
<td>Home-Based Neonatal Care</td>
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<tr>
<td>HBNCC</td>
<td>Home-Based Neonatal and Child Care</td>
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<tr>
<td>ICMR</td>
<td>Indian Council for Medical Research</td>
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<tr>
<td>IMNCI</td>
<td>Integrated Management of Neonatal and Childhood Illness</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>IMR</td>
<td>Infant Mortality Rate</td>
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<td>JSY</td>
<td>Janani Suraksha Yojna</td>
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<tr>
<td>KAP</td>
<td>Knowledge, Attitudes, and Practices</td>
</tr>
<tr>
<td>LBW</td>
<td>Low Birth Weight</td>
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<tr>
<td>LNMR</td>
<td>Late Neonatal Mortality Rate</td>
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<tr>
<td>MMR</td>
<td>Maternal Mortality Rate</td>
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<tr>
<td>MNHM</td>
<td>Maternal and Neonatal Health Mobilizers</td>
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<td>NMR</td>
<td>Neonatal Mortality Rate</td>
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<tr>
<td>NRHM</td>
<td>National Rural Health Mission</td>
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<tr>
<td>PMR</td>
<td>Perinatal Mortality Rate</td>
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<tr>
<td>PNMR</td>
<td>Post Neonatal Mortality Rate</td>
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<tr>
<td>SBR</td>
<td>Still Birth Rate</td>
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<tr>
<td>TSRDS</td>
<td>Tata Steel Rural Development Society</td>
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<tr>
<td>U5MR</td>
<td>Under-5 Mortality Rate</td>
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<tr>
<td>VRS</td>
<td>Vital Rate Survey</td>
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<td>WHO</td>
<td>World Health Organization</td>
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</table>
A. BACKGROUND

Each year 46,000 women in India lose their lives to complications of pregnancy and childbirth. About 1.2 million children in India die before they reach their fifth birthday out of which 696,000 newborns die during first month of life and contribute to 58% of under-5 deaths in India every year. The maternal and neonatal deaths in India constitute nearly 20%–30% of such deaths globally.

Global evidence shows that community health workers (CHWs), when appropriately trained, supplied, supported and supervised, can effectively contribute to improving maternal health and reducing child mortality. The Accredited Social Health Activist (ASHA), the CHW nurtured by Government of India’s flagship program, the National Rural Health Mission, is the community level health resource. In the eastern Indian state of Jharkhand,
the ASHA is called *Sahiyya*, and receives further support from the *Sahiyya Sathi*, who is a *Sahiyya* with additional supervisory role. The state government was keen to facilitate implementation of the *Sahiyya* scheme.

**Partners**

To reduce maternal and child mortality in rural and impoverished areas, the Maternal and Newborn Survival Initiative (MANSI) was launched in 2009. MANSI is a public–private partnership with a domain expert (SEARCH, Gadchiroli), a local implementer (Tata Steel Rural Development Society (TSRDS)), a facilitator and funder (the American India Foundation (AIF)), and Government of Jharkhand.

**Project goals**

1. To build the capacities of women and community health workers (*Sahiyyas*) through scaling up a successful Home-Based Maternal, Neonatal and Child Care (HBMNCC) model designed by SEARCH to reduce infant and child mortality.
2. Streamlining and strengthening *Janani Suraksha Yojna* (JSY), a maternity benefit scheme.
3. Creating/strengthening community level groups and institutions to improve maternal, neonatal, and child health.
4. To influence the corporate sector to become a significant player in the field of improving maternal health and the health of newborns.

**Project area and intervention description**

MANSI was implemented as an intensive pilot (2009–2014) in the predominantly tribal Seraikela block of Seraikela Kharsawan district covering a rural population of 83,000 across 167 villages that have limited access to basic health care in Jharkhand, one of the poor states in India.

It has provided quality training and refreshers to the *Sahiyyas* of the block along with hand-holding support to the district health team. The project helped in developing a supportive supervision model through its own field functionaries a role which is now being played by the *Sahiyya Sathis*. Other interventions were a maternal health mobile clinic, awareness generation, and community support mobilization.
B. EVALUATION

Methods

The final evaluation of the MANSI program was carried out during April–June 2015 after the project was completed in December 2014. It involved a) quantitative evaluation and b) qualitative evaluation.

Quantitative methods

1. Population-based surveys to estimate mortality rates as the indicators of impact.
2. Assessment of capacity (knowledge and skills) of Sahiyya, and their supervisors.
3. HBNCC service records and MIS data to assess coverage and quality of HBNC and morbidity rates and case fatality in neonates.
4. Survey of mothers (who had recent live deliveries) to assess their knowledge and practices and perceptions about HBNCC and MANSI.

Qualitative methods

Focus group discussions (FGDs) and in-depth interviews with the stakeholders and implementers at various levels—communities, mothers, Sahiyyas, Sahiyya Sathis, the project-based Maternal and Neonatal Health Mobilizers (MNHMs), Auxiliary Nurse Midwives (ANMs) and officers at the district and the state level.
C. FINDINGS

The independently conducted qualitative findings were reflective of the quantitative findings and provided an understanding of the reasons for the improvements in measures thus confirming the robustness of evaluation findings.

Impact

- Child mortality rate (CMR) in MANSi area showed a large reduction during 2011–2014.
- Neonatal mortality rate (NMR) reduced from 40.7 per 1,000 live births in 2011 to 22 in 2014 (46% reduction);
- Infant mortality rate (IMR) reduced from 53.6 per 1,000 live births in 2010 to 32.7 in 2014 (39% reduction almost touching the national goal of 30 per 1,000); and under-5 mortality (U5MR) from 67.5 per 1,000 live births in 2010 to 38.1 in 2014 (43.6% reduction).
- All reductions were statistically significant.
- MANSi made a large impact, substantially reducing the neonatal, infant and child mortality by nearly 40%–50%. As per Sample Registration Survey data, these reductions were five times the reduction...
in rural Jharkhand during the same period where the JSY was implemented, and at least three times the estimated impact of the Integrated Management of Neonatal and Childhood Illness (IMNCI) program of the WHO.

Capacity building

➢ Training of the field workers was effective. More than 90% of them showed high level of knowledge and skills (Grade A or B). This indicates that the training—in terms of content, methods and the system—was effective.

➢ The project constituted an effective team of the Sahiyya, and their supervisors, the MNHMs and the Sahiyya Sathi.

➢ The Sahiyyas have instilled confidence among the communities about their capability. They are valued and sought out for care during times of illness. They have been managing most of the low risk neonates along with some high risk newborns and, to some extent, pneumonia and diarrhea in children with support from the MANSI supervisors (MNHMs).

Services

➢ A large proportion (75%) of deliveries in the MANSI blocks occurred in the health care institutions suggesting an increased demand for and the popularity of the JSY of the government.

➢ Home-based care to mothers and newborns (HBNC) was provided by Sahiyya with very high (91%) coverage. She made adequate number of home visits (5) to the low risk neonates but less (5.8) than the recommended number (13) of home visits to the high risk neonates.

➢ Mothers scored high on correct knowledge (68%) and behaviors (89%), indicating

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Note: IMR Infant mortality rate; NMR Neonatal mortality rate; SBR Still birth rate.
very effective health education. Several important changes in beliefs and practices (in the right direction) were reported by mothers and Sahiyyas.

➢ The incidence of morbidities in newborns was in the expected range, with some exceptions.
➢ The gross reduction in case fatality (in the range of 31%–84%) in most cases of morbidities in newborns indicates effective care at home.
➢ Mothers were highly satisfied with the services of Sahiyyas (75%) and of MANSI (72%) and wanted them to continue (84%).
➢ Communities generally corroborated these changes, welcomed the HBNCC services, Sahiyyas and the MANSI clinic.

Areas of improvement

➢ Reduction in the following rates occurred to a lesser degree and the residual rates were still high at the end of the project—the still birth rate, the late- and post-neonatal mortality rate. Better asphyxia management to reduce the apparent still births, better detection of neonatal sepsis and its management with gentamicin to reduce the late neonatal deaths during 7–28 day, and improved coverage/quality of management of pneumonia and diarrhea in the 1–11 month-old babies are needed to make further improvements in these rates.
➢ Birth weights recorded appear to be of questionable quality. The discontinuity of care, between the institutional delivery and the home-based care thereafter, affects proper birth weight recording. Correct measurement and recording of birth weight needs to be ensured. This will help in improving the estimates of the incidence of low birth weight, the management of babies less than 2,000g at birth, and the weight gain during neonatal period.

➢ Number of home visits to the high risk neonates should be increased. As many as 26 out of 37 (70%) neonatal deaths in the last year of the project occurred in neonates who did not receive the adequate number of visits. Ensuring the recommended 13 home visits to the high risk and/or sick neonates will prevent some of these deaths and further reduce the NMR.
➢ Though Sahiyyas provide valued support to mothers, the preferred source of care for sick neonates and children remains the
private doctors and hospitals. With the improvements listed above, the Sahiyyas could provide better care for the sick neonates and children who cannot be referred—especially the preterm neonates, those with birth weight less than 2,000 g, those with suspected sepsis or asphyxia and children with pneumonia, diarrhea, and malnutrition.

➢ Refresher training is needed to keep the field workers’ knowledge updated. Similarly, the illiterate / semiliterate Sahiyyas need appropriate methods of training and record keeping. Use of the hand-held devices for the refreshing of knowledge and keeping of records may be useful.

➢ The HBNC record keeping and the correct use of data by the field supervisors and the project managers need much improvement.

➢ The project field supervisors (MNHMs) were reported to be more easily available and supportive to Sahiyyas. It will be a
challenge to get the same performance from the regular supervisors, the Sahiyya Sathis and the ANMs.

➢ The project did not provide any training to the ANMs. Lack of cooperation between Sahiyyas and ANMs was often reported. Better integration of the subcenter and the primary health centre staff, their orientation and change in the attitudes and behaviors will be desirable.

➢ While the project coordinated effectively with the district health team, coordination at the state level was less. More effective engagement at the state level would have better facilitated the resolution of the policy or implementation issues and the ultimate translation of methods and lessons from MANSI into the state program.

➢ The project management areas which could have been more effective include:
  » The use of mother/newborn records for monitoring the program coverage and quality.
  » Better use of financial incentives to Sahiyyas to encourage higher performance. Introduction of financial incentives to Sahiyyas for being present at the time of birth, and for making more home visits to high risk neonates.
  » Strengthened support to improve competencies and confidence in Sahiyyas to manage moderately sick neonates and children.
  » Improving the ability of field supervisors to detect the errors by the Sahiyyas and correcting them; and of the rigorous use of records, data and MIS by the project manager to support detection of sick neonates.
  » While the MANSI clinic was useful as it made medical officers available to the communities, this intervention should have been integrated with government services and focused on building systemic capacity to deliver maternal health services.
  » The programmatic or behavioral impeders in the government system need to be addressed.

D. SCOPE/LIMITATIONS OF THE EVALUATION

➢ Though MANSI originally also aimed to reduce maternal mortality, neither the population size nor the interventions were
adequate for this purpose. The activities such as the MANSI clinic, generating community support or strengthening JSY were limited. Records or data on these were not designed and maintained. Hence this evaluation did not attempt to systematically evaluate these components except for the feedback received in the qualitative studies.

- Due to the above factors the final evaluation focused mainly on knowledge and practices, capacity building, delivery and impact of HBNCC.

- In the absence of a control area left unserved by Sahiyya or HBNCC in rural Jharkhand, quantitative evaluation used the end line surveys and, in case of mortality rates, the “before (2011)” and “after (2014)” comparison to assess the impact.

- Some indicators (such as the coverage and case fatality of pneumonia and diarrhea management in children or the referral rates of sick neonates) could not be evaluated.

- Aspects such as project management, cost analysis, logistics, and supplies etc could not be covered as part of this evaluation.

E. EFFECTIVENESS OF PARTNERSHIP

Since the main intervention in MANSI was HBNCC through Sahiyyas, which was also introduced by the state NRHM in the entire state almost at the same time, the observed difference in the reduction in NMR and IMR in the MANSI area compared to rural Jharkhand can be attributed to the partnership approach in MANSI. The HBNCC in Seraikela block, when managed by the partnership including the state health mission, yielded high coverage, steep reduction in mortality rates and high level of community satisfaction.

The impact of MANSI would be gratifying for each of the four partners. Each brought in its unique strength and, together, achieved what was beyond them individually. The MANSI partnership potentially offers several lessons especially for the public–private and NGO partnership. It also offers a successful example of the CSR.

The four partners in this project, their respective roles, contributions, mechanisms of collaboration and decision making, partnership management, strengths and limitations offer a fascinating opportunity for an in-depth study. That would be a separate project.

F. SIGNIFICANCE

MANSI is an evidence-based demonstration of three things:

1. The HBNCC can be replicated with high coverage and good quality through the existing ASHAs in other areas.
2. It reduced the NMR, IMR and U5MR by a range of 40%–50% almost to the level of national goals.
3. The partnership approach—involving a technical partner, a local implementation partner, a facilitator partner and the government health system partner—could deliver much better results than what the government or the corporate or the NGO alone could have.

These lessons can be of enormous value to state government who wish to reduce NMR and IMR, and to the corporate sector desirous of contributing socially.
Introduction and Background

Each year 46,000 women in India lose their lives to complications of pregnancy and childbirth. About 1.2 million children in India die before they reach their fifth birthday out of which 696,000 newborns die during first month of life and contribute to 58% of under-5 deaths in India every year. These maternal and neonatal deaths in India constitute nearly 20% to 30% of such deaths globally.¹

Reducing mortality both among mothers and newborns has been a global and national priority. The National Population Policy, the successive Five Year Plans, the Millennium Development Goals, and the National Rural Health Mission (NRHM) have all set goals and specific targets such as reducing maternal mortality rate (MMR) to 100 per 100,000 pregnancies and infant mortality rate (IMR) to 28-30 per 1,000 live births. Despite laudable efforts, India has repeatedly missed these goals. How to rapidly reduce MMR, NMR, IMR and under-5 mortality rate (U5MR) are questions of national importance.

¹WHO, Global Burden of Disease, World Health Organization, 2015 http://www.who.int/healthinfo/global_burden_disease/en/. The Global Burden of Disease Study (GBD) is a comprehensive worldwide observational epidemiological study. It describes mortality and morbidity from major diseases, injuries and risk factors to health at global, national and regional levels. Examining trends from 1990 to the present and making comparisons across populations enables understanding of the changing health challenges facing people across the world in the 21st century.
Global evidence shows that community health workers (CHWs), when appropriately trained, supplied, supported, and supervised, can effectively contribute to improving health indicators. As a result, one of the important components of NRHM, the flagship program of the Government of India (GoI) launched in 2005, is the provision of an Accredited Social Health Activist (ASHA) who is a trained female community health activist to every village in the country. Nearly 900,000 ASHAs have been selected and trained since inception to work as an interface between the community and the public health system.

In Jharkhand, 40% births lack skilled birth attendance, denying basic neonatal care and significantly predisposing the newborns to the major causes of neonatal mortality. In 2007–08, this was true of eight in every ten births in the Seraikela Kharsawan district of the state. The current rural IMR in the state stands at

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3 National Family Health Survey 4; Fact Sheet Jharkhand and Indian, 2015–16.

The national government-sponsored cash incentives scheme designed to encourage skilled birth attendance has in reality focused on promoting deliveries either in public facilities (which are often under equipped) or private clinics (which are frequently of dubious quality). Multitude of factors, such as the cultural norm for mothers and children to be confined at home for a period of 40 days following birth; lack of a capable workforce within the public health system at the primary healthcare level, and the sparse distribution of private providers, result in 40% of women utilizing home-based deliveries. The women that do utilize public facilities experience a lack of adequate basic neonatal care. Furthermore, a large proportion of women marry before they are 18 years (44%); are anemic (67.3%), do not receive at least four antenatal care (ANC) checkups (75%); and postnatal care (PNC) within 48 hours of delivery (52%)\(^9\); all increasing the chances of a complicated delivery, low birth weight (LBW) and reduced neonatal survival.

The ASHA is called Sahiyya in Jharkhand and receives further support from the Sahiyya Sathi, who is a Sahiyya with additional supervisory role. The Sahiyya and the Sahiyya Sathi can become important resources to reduce maternal and newborn and child mortality. The Ministry of Health and Family Welfare and the State Rural Health Mission wanted make optimal use of the ASHA scheme. How to make ASHAs effective is a national challenge and opportunity.

Maternal and Newborn Survival Initiative (MANSI) project was conceived in 2009 within this context. With the goal to reduce maternal and child mortality in rural and impoverished areas, MANSI was launched in 2009, combining innovative approaches at both the individual and institutional levels to reduce maternal and child mortality.
engender positive change in health behaviors and outcomes.

Home-based neonatal and child care (HBNCC) method developed and field tested at several sites in India by the Society for Education, Action and Research in Community Health (SEARCH), Gadchiroli has successfully reduced NMR, IMR and U5MR in every trial. The approach involved training and enabling a CHW, such as ASHA, to deliver maternal, newborn and child health care in the community. It was found to be replicable in tribal and difficult areas as well. Hence the HBNCC intervention package was selected for MANSI and SEARCH was invited in 2010 as the technical expert partner in MANSI. Other components in MANSI were identified by the American India Foundation (AIF) and Tata Steel Rural Development Society (TSRDS) to strengthen MANSI.

1.1 PROJECT GOALS

The project aimed to build the capacities of women and community groups through scaling up a successful home-based maternal, neonatal and child care (HBMNCC) model designed by SEARCH. This project specifically aimed at 1) strengthening Sahiyya’s capacities in home-based newborn and child care to reduce infant and child mortality; 2) streamlining and strengthening Janani Suraksha Yojna (JSY) a maternity benefit scheme of the NRHM; and 3) to influence the corporate sector to become a significant player in the field of improving maternal health and health of the newborn.


Ankur Project Report, SEARCH 2006

1.2 PROJECT AREA

MANSI was implemented in the predominantly tribal Seraikela block of Seraikela Kharsawan district of Jharkhand covering a rural population of 83,000 across 167 villages that have limited access to basic health care. It expected to directly benefit 17,513 women in the 15–49 years age category and 8,670 children under the age of 5 years in these villages.

1.3 ROLES OF PARTNERS

MANSI is a public–private partnership (PPP) of four partners:

1. A technical partner, SEARCH (Gadchiroli) provided the seed solution, home-based newborn and child care (HBNCC), and the domain expertise.

2. A local implementation partner, TSRDS, Jamshedpur.

3. Health system partner, Department of Health, Government of Jharkhand.

4. The facilitator partner, AIF, which brought these partners together and funded the project.

While AIF is committed to the development of marginalized populations, TSRDS is committed to the development of population in areas surrounding their field of operation and SEARCH aims to expand the success of its HBNCC model across the country to reduce neonatal mortality and morbidity.

TSRDS was the implementing partner and provided logistics, financial, and staffing support to the program. The senior management was responsible for state level advocacy and access to services not available under the project was facilitated by linking communities to public services.
TSRDS which traditionally focused on welfare activities/health camps evolved its efforts into a programmatic approach through its Child Survival project in partnership with CARE. This helped them develop an identity as a valuable partner of the GoJ.

SEARCH was responsible for providing the solution (HBNCC), training, measurements and overall technical quality of the implementation. The HBNC modules, training of trainers, monitoring, assessments, as well as mortality surveys were an integral part of its support. They built the capacities of the implementing team in HBNC, monitoring and evaluation (M&E) as well as computerization of records. The baseline and end line quantitative evaluations and analyses were carried out by SEARCH’s expert team.

The Union Ministry of Health and Family Welfare and the State Rural Health Mission, Government of Jharkhand were the health system partners. The state mission wanted to pilot the solution (HBNCC) in a model situation to learn methods and lessons and develop a demonstration site in the state. Accordingly, the Mission Director and the Director of Health Services visited SEARCH to observe HBNC in action, approved the project MANSI, and permitted its implementation in one block through the Sahiyas and Sahiya Sathi. The District Medical Officer was the local representative in the project.

AiF was accountable for the delivery of program outcomes. It supported implementation through the placement of a Program Manager in Jamshedpur. In addition to facilitating the implementation monitoring role at the state level, AiF provided monitoring and program management support through staff members based in Delhi. They ensured coordination between the partners to develop the program implementation plans, annual work plans and all relevant assessments and evaluation. AiF was also a financial partner of MANSI.

When MANSI was conceived, it intended to implement the HBNCC package and system for strengthening interventions to improve the maternal, newborn and child health (MNCH) indicators in the block. The plan to strengthen the subcenters, a part of the detailed implementation plan, was explored, but was eventually shelved. Meanwhile, the project staff implemented the following:

- Generic behavior change communication (BCC) activities in the communities
- Worked with existing self help groups (SHGs) to promote support to MNCH issues
- Introduced the MANSI clinic to bridge the gaps in service provision

Wall writings which were planned as a BCC intervention could not be implemented owing to procedural barriers in procurement systems of the implementing partner. The HBNCC training could be rolled out only in early 2011 and could be completed by mid-2012. In a nutshell therefore, the HBNCC interventions were implemented for a period of 3 effective years (2012–2014).
Evaluation: The Context, Scope, and Design

MANSI was designed and started in 2009, but SEARCH joined in 2010 as the technical partner on HBNCC. Meanwhile the Government of Jharkhand introduced the home-based neonatal care (HBNC) under guidance from NRHM in 2011 along with the facility-based newborn and child care (FBNCC). The NRHM’s HBNC package and Sahiyya training is largely based on the SEARCH’s HBNCC training module but excludes administration of injections by the Sahiyya (Vitamin K at birth and use of gentamicin injections for treatment of neonatal sepsis) and use of bag and mask for resuscitating asphyxiated babies. The Government of Jharkhand (GoJ) completed the training of Sahiyas in HBNC modules (module 6 and 7) and has introduced a supervisory structure (the Sahiyya Sathi) as well in 2012.

As the additional inputs by MANSI for implementing HBNCC the

11The equipment and medication required to carry out these tasks do not form the part of the revised operational guidelines of HBNC, NRHM 2014.
project trained the trainers of *Sahiyyas* in SEARCH who in turn trained the *Sahiyyas* of the Saraikela block and introduced the supervisory structure (Maternal and Neonatal Health Mobilizers or MNHMs). The MNHMs were also trained in SEARCH. In addition MANSI introduced the annual vital rate survey (starting from 2011) to capture outcome level indicators. However, MANSI as originally designed in 2009 did not articulate M&E indicators and did not establish a baseline for measuring changes in knowledge, behavior, coverage, service utilization, and morbidity indicators. Actual implementation of HBNCC in the field was introduced a little later in 2011. Moreover, there was no control area in the design of the project, and as mentioned above, HBNCC was almost simultaneously introduced by the NRHM in the entire state.

Given these limitations and the inability to implement key HBNCC interventions (injection gentamicin, and use of bag and mask) in the absence of government approval, the evaluation team felt the need to restate the goals and objectives of MANSI and develop an evaluation matrix which could assess the key changes expected from the set of interventions implemented. The restated goals and objectives for the evaluation are presented in Annex 1.

### 2.1 TIMING OF EVALUATION

The five-year project (2009–2014) came to an end in October 2014. The end line quantitative and qualitative evaluation of MANSI was carried out between April and June 2015. While the quantitative methods were implemented by a group of external field workers under the technical guidance of SEARCH, the qualitative methods were implemented by an external Public Health Specialist, Dr Ranjani Gopinath, in close collaboration with SEARCH.

### 2.2 EVALUATION

The final evaluation involved a) quantitative evaluation; b) qualitative evaluation. The key methods employed are presented in the Table 1.

<table>
<thead>
<tr>
<th><strong>Table 1: Methodology for Evaluation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantitative Methods</strong></td>
</tr>
<tr>
<td>1. Vital Rate Surveys</td>
</tr>
<tr>
<td>Evaluation objectives addressed</td>
</tr>
<tr>
<td>• All mortality indicators</td>
</tr>
<tr>
<td>2. Capacity assessment of Sahiyyas, MNHMs, Sahiya Sathis</td>
</tr>
<tr>
<td>3. Analysis of HBNCC data</td>
</tr>
<tr>
<td>For output indicators and morbidity indicators (provided the quality of documentation good).</td>
</tr>
<tr>
<td>4. Survey of mothers: Knowledge, attitudes, and practices (KAP) and quality of service provision</td>
</tr>
<tr>
<td>Evaluation objectives addressed</td>
</tr>
<tr>
<td>• Knowledge, capacity, coverage, and quality of HBNCC service indicators</td>
</tr>
</tbody>
</table>
MANSI was evaluated on the following parameters:

1. **Impact on mortality rates:**
   i) Neonatal mortality rate (NMR)
   ii) Infant mortality rate (IMR)
   iii) Under-5 child mortality rate (U5MR or <5 CMR) and on several component rates:
      a) Early neonatal mortality rate (ENMR)
      b) Late neonatal mortality rate (LNMR)
      c) Post neonatal mortality rate (PNMR)
      d) 1–4 year mortality rate
      e) Still birth rate (SBR)
      f) Perinatal mortality rate (PMR)

2. **Knowledge and skills of the care providers:**
   Competence of the *Sahiyyas, Sahiyya Sathis* and MNHMs, for the provision of HBNCC

3. **The HBNCC services provided:** Coverage, quality, incidence of morbidities and case fatality, and the management of the high risk children and babies with infections.

4. **Mothers’ survey** for assessing the
   i) The KAP of mothers regarding pregnancy, delivery and care of the newborn
   ii) Services received by mothers from *Sahiyyas* during pregnancy, delivery and the newborn period, as reported by mothers
   iii) Signs of illness in the newborns (as noticed by mothers)
   iv) Satisfaction of mothers with respect to the services received from the *Sahiyyas*

Chapters 3 and 4 describe the methods used for evaluation, the results, and the interpretation for each of the above mentioned parameters.
Quantitative Evaluation: Methods, Results, and Discussion

3.1 IMPACT ON MORTALITY RATES

Methodology

The impact of MANSI on the mortality rates was estimated from the difference in the vital rates before and after the implementation of the HBNC component in MANSI.

The ‘base line’ vital rates for the period of January 2011 to December 2011 were measured by way of a house-to-house cross sectional survey and this was repeated annually in 2012 and 2013. These surveys were designed by SEARCH; the training of project personnel for data collection, field supervision, data validation and analysis was done by SEARCH. The
**Figure 1**

*The flow diagram of vital statistics survey (Jan–Dec 2014)*

1. **MANSI project villages: 167**
2. Planning, designing the tools, and training by SEARCH
3. Selection of new workers from Saraikela
   - Village level worker surveyors (33)
   - New supervisors (4)
4. Trained by supervisors and SEARCH team at the Saraikela HQ
5. Trained at SEARCH Gadhiorli
6. Pilot in the field and retraining
7. Data collection started in April 2015
8. Each house visited (daily 30 houses per worker)
   - Update the population list
   - Record all births (live & still births) in 2014
   - Record all child deaths in 2014
   - Record the cause of death
9. Data collection completed in June 2015
10. Every record checked by SEARCH team
11. Data entry & coding done at MANSI HQ
12. Analysis and interpretation done at SEARCH HQ
actual data collection was done by the field supervisors (MNHMs), field coordinators, and the zonal coordinators of MANSI.

The end line vital rates for the period Jan–Dec 2014 were determined through a vital rate survey, conducted in early 2015 by trained independent personnel. Though all the methods and the tools for the survey were same as that for the base line survey, the important difference was the personnel who conducted the survey. To remove the possible bias in the end line survey due to the involvement of personnel implementing the project, the new personnel (the surveyors and their supervisors) were recruited specifically for conducting the end line survey and it was ensured that these surveyors had had no earlier connection with MANSI and its implementation.

The process of the ‘end line’ survey is outlined in the flow diagram (Figure 1).

Results and discussion

1) Population

A population increase of 2.3% was observed in the project area during the period 2011 and

---

### Table 2: Project Population

<table>
<thead>
<tr>
<th>Parameter</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Villages</td>
<td>167</td>
<td>167</td>
<td>167</td>
<td>167</td>
</tr>
<tr>
<td>Population</td>
<td>79,414</td>
<td>82,536</td>
<td>83,856</td>
<td>81,271</td>
</tr>
</tbody>
</table>

2) Births and child deaths

### Table 3: Number of Births and Child Deaths in the Base line and End line years

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Base line 2011 (no.)</th>
<th>End line 2014 (no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total population</td>
<td>79,414</td>
<td>81,271</td>
</tr>
<tr>
<td>Total live births</td>
<td>1,866</td>
<td>1,685</td>
</tr>
<tr>
<td>Total still births</td>
<td>45</td>
<td>35</td>
</tr>
<tr>
<td>Early neonatal deaths (0–6 days)</td>
<td>61</td>
<td>26</td>
</tr>
<tr>
<td>Perinatal deaths (still births + early neonatal deaths)</td>
<td>106</td>
<td>61</td>
</tr>
<tr>
<td>Late neonatal deaths (7–28 days)</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>Total neonatal deaths</td>
<td>76</td>
<td>37</td>
</tr>
<tr>
<td>Post neonatal deaths (1–11 months)</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Infant deaths</td>
<td>100</td>
<td>55</td>
</tr>
<tr>
<td>1 – 4 year deaths</td>
<td>26</td>
<td>9</td>
</tr>
<tr>
<td>&lt;5 year child deaths</td>
<td>126</td>
<td>64</td>
</tr>
</tbody>
</table>

2014. During the same period the population growth rate of Jharkhand state was 2.2% per year.12

There seems to be a small drop in the total population in 2014 (Table 2). This may be due to temporary migration for livelihood of families which were included in the previous surveys. Since the vital rate surveys were not aimed to measure other socio-economic variables, any comment on the population characteristics is not possible. The sex ratio in the live births recorded in 2014 was 980 females per 1,000 males.

12 http://www.census2011.co.in/census/state/jharkhand.html (viewed on 06.12.2016)
Table 4: Changes in the Birth and Death Rates During 2011 to 2014 (deaths per 1,000 live births)

<table>
<thead>
<tr>
<th>Vital rates</th>
<th>Change % (2014 over 2011)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude birth rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 23.5</td>
<td>2012: 21.2</td>
<td>2013: 20.9</td>
</tr>
<tr>
<td>Still birth rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 23.5</td>
<td>2012: 19.6</td>
<td>2013: 20.7</td>
</tr>
<tr>
<td>Early neonatal mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 32.7</td>
<td>2012: 25.2</td>
<td>2013: 23.4</td>
</tr>
<tr>
<td>Perinatal mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 55.5</td>
<td>2012: 44.3</td>
<td>2013: 43.6</td>
</tr>
<tr>
<td>Late neonatal mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 8.9</td>
<td>2012: 8.0</td>
<td>2013: 3.99</td>
</tr>
<tr>
<td>Neonatal mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 40.7</td>
<td>2012: 33.2</td>
<td>2013: 27.4</td>
</tr>
<tr>
<td>Post neonatal mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 12.9</td>
<td>2012: 17.2</td>
<td>2013: 11.9</td>
</tr>
<tr>
<td>Infant mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 53.6</td>
<td>2012: 50.4</td>
<td>2013: 39.4</td>
</tr>
<tr>
<td>1–4 year mortality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 13.9</td>
<td>2012: 13.7</td>
<td>2013: 10.3</td>
</tr>
<tr>
<td>&lt; 5 mortality rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011: 67.5</td>
<td>2012: 64.1</td>
<td>2013: 49.6</td>
</tr>
</tbody>
</table>

3) Impact on mortality rates

Birth and mortality rates were estimated for the years 2011, 2012, 2013, and 2014 (Table 4, Figures 2 and 3).

Figure 2: Changes in the Important Mortality Rates (2011 to 2014)

Reduction in mortality rates

A substantial reduction in almost all mortality rates is seen. The NMR reduction (46.0%) is highly significant. It is due to a major reduction in ENMR (52.6%) and, to a lesser degree, due to reduction in late NMR. Reduction in IMR (39.0%) is also highly significant. The reduction in IMR is largely attributable to reduction in the NMR. A large reduction in <5 CMR (43.6%) is mainly because of the reduction in NMR as well as in the 1–4 year mortality rate (62%).

The steady declining trend in the NMR, IMR, 1–4 year MR, <5 CMR and PMR (Figures 2 and 3 and Table 3) during 2011 to 2014 corroborate the impact finding. Some annual fluctuations are seen which could be random.
The crude birth rate (CBR) shows a 12% decline but that is not due to HBNC. The still birth rate unexpectedly shows little reduction. This might be an indicator of the quality of institutional deliveries in the JSY. However, a 39% reduction in the perinatal mortality rate (which is a sum total of the SBR and the early neonatal mortality) is redeeming.

The residual mortality in 2014 (Table 3) is mainly in the still birth rate (20.4), in early neonatal (0–6 days) rate (15.5), post-neonatal (1–11 months) rate (10.7), and the late NMR (6.5) which have a scope for further reduction.

Correction based on under-reporting

It is a common experience in cross sectional vital surveys that a proportion of families fails to report (recall loss of) the past neonatal deaths. By matching the deaths with the data collected from the HBNC forms seven additional neonatal deaths were identified which the end line survey had missed. By adding these (30+7) the total number
of deaths of newborns obtained from the end line survey was corrected to 37. Thus the neonatal deaths in the year 2014 were recorded by a dual method. Various mortality rates and the reduction have been estimated using this number (37) of neonatal deaths in the year 2014. Since there was hence no HBNC service and no HBNC forms for the period of the base line, the data, based only on the annual cross-sectional survey, most likely have an under-recording and hence the baseline rates were under-estimated. If we adhere only to the findings of baseline and end line vital rate surveys thereby using a similar method for both the estimates then the end line NMR, IMR, and CMR would be lower (17.8, 28.6, and 33.9), and hence the impact respectively estimated as −56.3%, −46.6%, and −49.8%.

Attribution

Though it is difficult to attribute the observed impact to the individual components of reproductive and child health (RCH) services, generally one could attribute reduction in birth rate to the state family planning activities and other socio-economic development; reduction in still birth rate to better maternal care and the care of asphyxiated babies immediately after birth, and reduction in early neonatal mortality to the care of the preterm babies by way of HBNC or referral care. The relatively small reduction in the late NMR is unexpected and is most probably caused by the inadequate neonatal sepsis treatment. A steep reduction in 1–4 year MR can be attributed to the management of childhood pneumonia and diarrhea in MANSI, and to the increased knowledge and practices of mothers (detailed in qualitative findings), and may also be due to possible improvements in referral care though the project does not have record of these.
Comparison of impact

We compared the impact of MANSI with the following:

1. The rural Jharkhand state where NRHM was operational
2. The Integrated Management of Neonatal and Childhood Illnesses (IMNCH) study of the UNICEF
3. The Ankur project in which HBNCC was introduced in Maharashtra
4. The original HBNCC trial at Gadchiroli

1. Rural Jharkhand

Since the evaluation design did not include a control population, we have compared the reduction in IMR in MANSI with the reduction in rural Jharkhand during 2011–2014 as estimated by the Sample Registration Survey System (Figure 4). While the IMR in rural Jharkhand reduced by 4 percentage points from (41 to 37), it reduced by 21 points (from 54 to 33) in MANSI. Therefore, net contribution of MANSI to the IMR reduction in Seraikela block can be estimated as 17 points (21 minus 4) or nearly 80% of the reduction.

**Figure 4: Comparison of IMR in MANSI and Rural Jharkhand in 2011–2014**

*Source: Data for rural Jharkhand drawn from the Sample Registration Survey System, Office of the Registrar General and Census Commissioner of India, Ministry of Home Affairs, Government of India*
2. The Integrated Management of Neonatal and Childhood Illness

The estimated impact of MANSI stands out when compared with the IMNCI interventions of the WHO/UNICEF. Here we compare the impact of HBNC in MANSI with the effect of IMNCI as assessed in the controlled field trial in Haryana\(^\text{13}\) (Figure 5). It should be borne in mind that the Haryana trial was a controlled trial, and MANSI was a before–after study.

The recent WHO evaluation of the IMNCI program states that a Cochran review found that IMNCI, when implemented in community and health facilities, was associated with 15% reduction in child mortality.\(^\text{14}\) The 43.6% reduction in <5 CMR under MANSI was almost thrice the reduction driven by the IMNCI.

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\(^{13}\) Bhandari Nita, Mazumder Sarmila, Taneja Sunita, Sommerfelt Halvor, Strand Tor A., ‘Effect of implementation of integrated Management of Neonatal and Childhood Illness (IMNCI) programme on neonatal and infant mortality: cluster randomised controlled trial’, BMJ 2012; 344 :e1634, doi: 10.1136/bmj.e1634 (Published 21 March 2012)

intervention (currently in operation in nearly 100 countries).

3 and 4. Other HBNC studies—Ankur and Gadchiroli trial

Comparison of impact on mortality rates in MANSI with the replication of HBNC in Maharashtra by other NGOs—the ANKUR project (2005) and with the original field trial of HBNC in Gadchiroli (1993–98) is shown in Figure 6.

1. The impact of MANSI has been estimated through a before–after comparison, similar to the Ankur project, while it was estimated by the way of a controlled field trial in Gadchiroli. The base line IMR in MANSI was 53.6; it was 42.6 in Ankur project sites; and 75.5 in Gadchiroli. These differences must be borne in mind while comparing the impact in these three studies which introduced the HBNCC intervention in rural–tribal areas.

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2. The impact on the <5 CMR and the IMR is more or less similar in the three studies.

3. The NMR reduction in MANSI (46%) was comparable to that in Ankur (50.8%), but it was substantially more in Gadchiroli trial (62%). This was largely due to the difference in their baseline NMR and the effect on late NMR.

4. The glaring difference is in the impact on the late NMR (7–28 days). It falls short in MANSI, probably due to two reasons. It was already low (8.0) at the baseline. Moreover, the HBNCC intervention in MANSI did not include treating neonatal sepsis, the major component of the late NMR, with injection gentamicin. This seems to have dampened the ability of MANSI to drive larger reductions in the late NMR.

5. A steep reduction in the 1–4 year CMR (62%) is recorded in MANSI (see Table 3). It could have been partly due to the management of pneumonia and diarrhea in children. Though not recorded in the data, the referral of children with pneumonia and diarrhea might have improved in MANSI due to the contact with the Sahiyya.

Conclusions

1. The mortality rates in MANSI area showed a large reduction during 2011–2014. The reduction was in NMR by 46%, IMR by 39% and the <5 CMR by 44%. All reductions were statistically significant.

2. The impact of MANSI on IMR was three to five times larger than in rural Jharkhand during the same period or of the IMNCI intervention as reported by the WHO. The impact was of a comparable magnitude as in other HBNCC studies conducted by SEARCH in Gadchiroli and Ankur in Maharashtra.

3. It is noteworthy that the IMR in MANSI, in the last year of the project (2014), reduced to 32.7 per 1,000 live births, which nearly touches the national goal of an IMR of 30 as enunciated in the National Population Policy as well as the 11th FiveYear Plan of the Government of India.

4. There is scope for further reduction in the still birth rate, in the late NMR and post-neonatal mortality rate. Better management of delivery and birth asphyxia, neonatal sepsis, and diarrhea and pneumonia in infants are likely to contribute to mortality rate reduction.

3.2 KNOWLEDGE AND SKILLS OF THE COMMUNITY HEALTH WORKERS AND SUPERVISORS

The assessment of knowledge and skills of the Sahiyyas (CHW), Sahiyya Sathis (field supervisors of the government) and the MANSI supervisors (MNHMs) was done by the independent consultant, Dr Ranjani Gopinath, who was provided the necessary tools such as a question paper for testing knowledge of Sahiyyas and checklists for checking skills. She was also provided the DVD titled “शिक्षा कौशल्य प्रशिक्षण फिल्म” developed by SEARCH, as the gold standard for the important skills. While all the MNHMs and the Sahiyya Sathi in MANSI area were assessed, only a randomly selected sample of 52 Sahiyyas out of the total 206 were
### Table 5: Evaluation of Knowledge and Skills

<table>
<thead>
<tr>
<th>Category of field worker</th>
<th>Assessed for knowledge through written exam (no.)</th>
<th>Assessed for knowledge orally (no.)</th>
<th>Assessed for skills (no.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sahiyya</td>
<td>41</td>
<td>11</td>
<td>52</td>
</tr>
<tr>
<td>Sahiyya Sathis</td>
<td>13</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>MNHMs</td>
<td>19</td>
<td>0</td>
<td>19</td>
</tr>
</tbody>
</table>


assessed as their number was large. Since 11 of the randomly selected 52 Sahiyyas were either illiterate or not comfortable writing an examination, they were evaluated by oral examination. The MNHMs and Sahiyya Sathis were also assessed using the same written test and skills checklist. Essential details regarding this evaluation are given in Table 5.

Results and discussion

#### a) Knowledge

The scores of the three categories of field workers in the written examination are presented below in Figures 7, 8, and 9.

**Figure 7: Sahiyyas’ Knowledge Score (written + oral examination) (n= 52)**

**Figure 8: Sahiyya Sathis’ Knowledge Score (written examination) (n= 13)**
If the categorization of the field workers is done on the basis of the knowledge test alone, the following results are noted.

The knowledge scores of these three types of workers are to a large extent, similar. While those in the ‘C’ category (<40% score) were very few, those in the A (≥65%) category were less than desirable. This probably suggests a need for refresher training and continued learning. Smaller proportion (30.8%) in the ‘A’ category of the Sahiyya Sathis, government program supervisors, compared to 47.4% of the MANSI supervisors (MNHMs) probably reflects the effect of motivation and work environment.

b) Skills

The mean scores of each category of the field workers in the skill assessment test are given in the Table 6.

The skill levels of all three types of workers were high with the mean scores on eight skills being 84% for Sahiyyas, 89.5% for MNHMs and 87% for the Sahiyya Sathis. Quality training, repeated practice, use in the field and good supervision are the likely explanations. However, the skill performance was moderate on the two important skills viz. communication and the filling of danger signs form.

Table 6: Skills Score of Three Types of Workers

<table>
<thead>
<tr>
<th>Skills assessed</th>
<th>Sahiyyas (52)</th>
<th>MNHMs (19)</th>
<th>Sahiyya Sathis (13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic communication skills</td>
<td>62.8</td>
<td>66.7</td>
<td>68.4</td>
</tr>
<tr>
<td>Hand-washing checklist</td>
<td>94.7</td>
<td>95.1</td>
<td>100</td>
</tr>
<tr>
<td>Measuring temperature</td>
<td>97.3</td>
<td>98.9</td>
<td>97.7</td>
</tr>
<tr>
<td>Weighing the baby</td>
<td>98.1</td>
<td>97.4</td>
<td>94.4</td>
</tr>
<tr>
<td>Wrapping in blanket and warm bag</td>
<td>89.2</td>
<td>100</td>
<td>90.8</td>
</tr>
<tr>
<td>ORS</td>
<td>70.4</td>
<td>83.6</td>
<td>80.8</td>
</tr>
<tr>
<td>Counting respiration</td>
<td>89.7</td>
<td>96.5</td>
<td>92.3</td>
</tr>
<tr>
<td>Danger signs form</td>
<td>50.5</td>
<td>55.3</td>
<td>59.6</td>
</tr>
<tr>
<td>Mean Skill Score (%)</td>
<td>84%</td>
<td>89.5%</td>
<td>87%</td>
</tr>
</tbody>
</table>
3.3 HBNCC: COVERAGE, QUALITY, MORBIDITIES, AND CASE FATALITY

A central task of Sahiyya was to record the findings and care provided to each mother-newborn by way of home visits. This record was maintained on a structured HBNCC record developed by SEARCH and provided to MANSi. This record guides the Sahiyya on the information to seek from the mother; observations to make while examining the mother and newborn; bases of diagnosis; and appropriate actions to take. Additionally, this record becomes an important tool for the supervisor while monitoring the work of the Sahiyya. Furthermore, this provides data for monitoring the coverage, quality, and the outcome of the home-based care provided. These records were filled by Sahiyyas, verified by the supervisors and collected, checked and stored by the MANSi statistician on an ongoing basis. The data was entered and analyzed to assist the project manager carry out the assessment of service provisioning and introduction of corrective measures. These records and the data entered by MANSi were used to understand the coverage, quality, morbidities, and case fatality.

Coverage of HBNCC

We could obtain total 1,540 HBNCC records pertaining to the period of Jan–Dec 2014. The total live births recorded in the end line vital statistics survey were 1,685. Thus the coverage of HBNCC in MANSI in its final year was very high at 91.4%. As 22 Sahiyyas were unable to write, it is possible that the babies in their villages might have received care but no records were kept.

Place of delivery

Out of the 1,540 deliveries, 1,163 (75.5%) occurred in health care institutions, and 377 (24.5%) occurred at home (Figure 10).

Conclusion

The field workers—all three types—had successfully learnt the required competencies. They were much better on the skills but tended to forget. The difficulty faced by 11/52 Sahiyyas in giving a written test is an example of the reality in tribal areas and hence, the need for using appropriate methods of training and evaluation.
The field area of MANSI was divided into four zones by the project. The HBNCC coverage and the place of delivery were found to vary across the four zones (Table 7).

It is observed that the HBNCC coverage was a little less (82% and 83%) in zones 1 and 2, while the proportion of institutional deliveries was lowest (63.4%) in the zone 2, either due to population characteristic (not known) influencing the acceptance of institutional delivery or less active health care of the NRHM in this zone. The total 75.5 percent institutional delivery reveals that the JSY and NRHM have resulted in increased coverage of institutional delivery even in the less served areas.\(^\text{16}\)

### Table 7: Coverage and the Place of Delivery in the Four Zones (2014)

<table>
<thead>
<tr>
<th>Zone</th>
<th>Population No.</th>
<th>No. of live births in VRS data</th>
<th>HBNC records</th>
<th>HBNC% coverage</th>
<th>Place of delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td></td>
<td></td>
<td>Home %</td>
</tr>
<tr>
<td>1</td>
<td>24,943</td>
<td>30.7</td>
<td>526</td>
<td>437</td>
<td>83.1</td>
</tr>
<tr>
<td>2</td>
<td>16,822</td>
<td>20.7</td>
<td>346</td>
<td>284</td>
<td>82.1</td>
</tr>
<tr>
<td>3</td>
<td>20,519</td>
<td>25.2</td>
<td>400</td>
<td>405</td>
<td>101.3</td>
</tr>
<tr>
<td>4</td>
<td>18,987</td>
<td>23.4</td>
<td>413</td>
<td>414</td>
<td>100.2</td>
</tr>
<tr>
<td>Total</td>
<td>81,271</td>
<td>100.0</td>
<td>1,685</td>
<td>1,540</td>
<td>91.4</td>
</tr>
</tbody>
</table>

of institutional delivery is likely to be due to the unwelcoming attitude of the institutional staff, disabling Sahiyya from providing immediate care to newborns. It means that the immediate care was to be almost entirely provided by the institutional staff. This may partly explain the low impact (-13%) on the still birth rate in MANSI. The presence of Sahiyya at the time of delivery as reported by mothers was higher (55%), as we shall see in Section 4, Table 12.

Home visits by Sahiyya

Mean number of home visits during 0–28 days after birth were (recommended number in parenthesis)

- Low risk neonates 5.0 (5)
- High risk neonates 5.8 (13)

Five home visits to a normal (low risk) neonate is what is recommended in the project guidelines, or is close to the six home visits recommended by the NRHM. The home visits to high risk neonates are crucial because nearly 80% of neonatal deaths occur in these 20% high risk neonates. The 5.8 visits is way short of the recommended 13 visits. The most probable explanations are

- Sahiyyas did not receive financial incentive for the HBNC work from MANSI; and the ₹250 per neonates announced by the NRHM did not start flowing regularly till 2014. This lack of financial remuneration not only demotivated the Sahiyyas but it also made it difficult for the supervisors to exercise influence on their work.
- The NRHM guidelines do not distinguish in the promised payment of ₹250 between normal baby needing 6 visits and high risk baby needing 13 visits. The limited number of home visits to the high risk neonates is a signal to the NRHM to correct this anomaly.

Sahiyya’s presence at the time of delivery

Based on the HBNC records, Sahiyya’s presence at the time of delivery was 42% in home deliveries and 6.4% in the institutional deliveries. The presence of Sahiyya at the time of home delivery is crucial for the resuscitation of asphyxiated neonates, for initiating early breast feeding, and if necessary, for advising immediate referral of mother or the baby. The 42% presence is at a moderate level, indicating the difficulty of this task in tribal villages with small hamlets scattered in the forests. The very low (6.4%) presence of Sahiyya at the time.
Quality of HBNC records

A lot was left to be desired here. The records were often incomplete, necessary information missing and various signs of illnesses often not recorded. This was a failure of field supervision and the program management. Due to this, the incidence of recorded neonatal morbidities was low, so was the treatment of illnesses. Similarly, despite the project decision, the data in the HBNC records were not computer entered on an ongoing basis, depriving the manager of the benefit of the performance data.

Incidence of neonatal morbidities and case fatality

We present the incidence of morbidities and case fatality (CF) in Table 8, along with the proportion of CFs as observed in the pre-intervention year in Gadchiroli trial as a likely base line in MANSI, since we do not have the CF recorded in the base line year of MANSI. The percentage reduction in the CF is indirectly calculated in the last column from the CF in MANSI in 2014 and the CF in Gadchiroli before intervention as a surrogate for the base line CF in MANSI.

Incidence

- High risk neonates (20.6%), preterm (14.4%), feeding problem (8.1%) and pus in umbilicus (7.7%) were common neonatal morbidities in the MANSI area in 2014.
- The proportion of low birth weight neonates was unrealistically low at 15%, which is nearly half the national average. This may have been due to difficulty Sahiyya faced in recording or obtaining birth weight in the babies born in institutions.
- Incidence of neonatal sepsis and birth asphyxia could not be reliably estimated due to poorly recorded data in the forms. This is a major flaw. If these life threatening morbidities were not identified, they would go untreated.

<table>
<thead>
<tr>
<th>Morbidity*</th>
<th>Total neonates</th>
<th>No. with morbidity</th>
<th>incidence %</th>
<th>Neonatal deaths</th>
<th>CF % (2014)</th>
<th>CF % (1995–96)#</th>
<th>Reduction@</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm</td>
<td>1540</td>
<td>221</td>
<td>14.4</td>
<td>16</td>
<td>7.2</td>
<td>33.3</td>
<td>-78.4</td>
</tr>
<tr>
<td>Birth weight &lt;2,000g</td>
<td>1540</td>
<td>52</td>
<td>3.4</td>
<td>13</td>
<td>25</td>
<td>36.5</td>
<td>-31.5</td>
</tr>
<tr>
<td>Birth weight 2,000g–2,499g</td>
<td>1540</td>
<td>181</td>
<td>11.8</td>
<td>1</td>
<td>0.6</td>
<td>3.7</td>
<td>-83.8</td>
</tr>
<tr>
<td>Total low birth weight babies (&lt;2,500g)</td>
<td>1540</td>
<td>233</td>
<td>15.2</td>
<td>14</td>
<td>6</td>
<td>11.3</td>
<td>-46.9</td>
</tr>
<tr>
<td>High risk babies</td>
<td>1540</td>
<td>317</td>
<td>20.6</td>
<td>26</td>
<td>8.2</td>
<td>24.8</td>
<td>-66.9</td>
</tr>
<tr>
<td>Feeding problems</td>
<td>1540</td>
<td>125</td>
<td>8.1</td>
<td>19</td>
<td>15.2</td>
<td>22.6</td>
<td>-32.7</td>
</tr>
<tr>
<td>Hypothermia</td>
<td>1540</td>
<td>25</td>
<td>1.6</td>
<td>2</td>
<td>8</td>
<td>15.4</td>
<td>-48.1</td>
</tr>
<tr>
<td>Pus in umbilicus</td>
<td>1540</td>
<td>118</td>
<td>7.7</td>
<td>1</td>
<td>0.8</td>
<td>2.6</td>
<td>-69.2</td>
</tr>
<tr>
<td>Failure to gain weight**</td>
<td>1214</td>
<td>608</td>
<td>50.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# CF % in Gadchiroli in pre-intervention year (1995–96)—a likely baseline CF in MANSI in 2011
@ Reduction % in CF in MANSI compared to the baseline CF in Gadchiroli in 1995–96
* Overlapping types
** Weight gain from birth to the 28th day less than 300g. By definition, no neonatal death

Table 8: Incidence of Neonatal Morbidities and Case Fatality; (Jan–Dec 2014, n=1,540)
Incidence of hypothermia (1.6%) was low, especially in view of the large number of preterm or high risk babies prone for hypothermia.

Incidence of pus in umbilicus (7.7%) was high. As 75% of the newborns were born in health care institutions, one would expect better cord care and lower rate of infection. Out of the 118 cases of umbilical infection, 87 babies were born in institutions and 31 babies were born at home, giving the respective incidence of pus in umbilicus as 7.5% in institutional born babies and 8.2% in home delivered babies.

Case fatality

HBNC includes early detection and management of common neonatal morbidities. The CF% of such cases is a good indicator of the outcome of case management.

The percentage of CF was high (25%) in neonates with birth weight < 2,000g. Though it was less than the base line CF extrapolated from Gadchiroli (36.5%), it was higher than the CF (14.3%) in the third year of intervention in Gadchiroli trial.

For other morbidities, including preterm, hypothermia, and high risk babies, the CF
was reasonably low (<10%), several times less than the estimated base line CF.

- It was very low for neonates in the 2,000g–2,499g group, and in babies with umbilical pus.
- The percentage CF seems to have steeply reduced compared to the extrapolated baseline CF.
- Case fatality in high risk neonates was following in the four zones
  - Zone 1 6.4%
  - Zone 2 15.1%
  - Zone 3 5.0%
  - Zone 4 9.9%
  - Total 8.2%

- This suggests problems in the quality of care in the zone 2.
- We may conclude that the CF%, reflecting the outcome of HBNC in MANSi, was much reduced from the extrapolated base line CF for most of the major neonatal morbidities. The incidence and CF could not be estimated for sepsis and birth asphyxia.

**Weight gain**

Neonates usually gain nearly 500g or more weight during 0–28 days. Babies who gain <300 g are at higher risk of death after the neonatal period.

Of the 1,214 neonates who were weighed on the 28th day, 50.1% had gained less than 300 gm in the neonatal period. This was extremely high compared to (17.9% in Gadchiroli trial in the pre-intervention year 1995–96). This failure to gain weight when viewed with the reported low incidence of low birth weight (15.2%) leads one to conclude that the birth weight recording was possibly erroneous. The health staff in institutions may have inflated the birth weight so as not to hospitalize the low birth weight neonates. If the birth weight was recorded in excess, the weight gain till the 28th day would appear to be less.

**Diagnosis and management of neonatal and childhood infections**

Infections—sepsis in neonates, and pneumonia and diarrhea in children—are major causes of mortality in children the world over. A major proportion of reduction in neonatal and child mortality in Gadchiroli trial was attributed to the early diagnosis and treatment of these infections. However, these aspects of HBNCC in MANSi remained inadequately documented. Neonatal sepsis forms were not filled and use of injection gentamicin not introduced due to lack of permission from the state government. The management of sepsis in neonates and of pneumonia in children by treating with oral cotrimoxazole was taught to Sahiyyas, but their records were not maintained. The project MIS reported a small number of such treatments but these could not be verified in the absence of individual records of case management. Hence we could not satisfactorily evaluate this vital component of HBNC.

In the absence of the records of case management of children with infections, we obtained the surrogate information from the project inventory, the number of cotrimoxazole syrup bottles (dispensed one bottle per child with pneumonia or neonate with suspected sepsis) used by Sahiyyas. Total 265 bottles were used by Sahiyyas in the year 2014. This will give a case management rate (of pneumonia in children and sepsis in neonates together) of 32 per 1,000 children.

low or inadequate, because sepsis is the most common cause of death in this period. A steep reduction in the late NMR was observed in the Gadchiroli field trial and in Ankur (Figure 6) where sepsis management with gentamicin was provided. An alternative possibility is that the incidence of sepsis in MANSi was really lower than in the Gadchiroli study. This view is corroborated by a lower level of signs of illness in newborns as reported by mothers, as we shall see in the last section (Table 13).

18 SEARCH data
HBNC service to the high risk neonates

An evaluation of this was attempted by identifying the high risk neonates born recently (in January and February 2015) from the mother–newborn records. The consultant, Dr Ranjani visited the mothers during April 2015 and interviewed them about various aspects of care received from the Sahiyya. The number was small (31), and mothers could not recall information on a large number of questions. Hence we could not confidently analyze or interpret this aspect.

Conclusions

1. The coverage of HBNC services in MANSI was very high (91%), number of visits adequate in normal neonates (5) but less than required in high risk neonates (5.8).

2. The incidence of neonatal morbidities in preterm and high risk neonates was within the expected range. In all probability, birth weights were not accurately recorded despite the high proportion of institutional deliveries (75%) resulting in an underestimation of the incidence of low birth rate and overestimation of the failure to gain weight. Incidence of pus in umbilicus was high (7.5%) despite 75% institutional deliveries. The incidence of birth asphyxia and sepsis could not be estimated.

3. All CFs were grossly reduced under MANSI compared to the extrapolated base line CF. The CF in the preterm and high risk neonates was relatively low (7.2% and 8.2%). However, CF was high in neonates with less than 2,000g birth weight (25%) and in those with feeding problems (15%). Most of them, by definition, would be high risk babies or with sepsis.

4. Infections such as neonatal sepsis and pneumonia in children were treated with co-trimoxazole, at the rate of 32 treatments per 1,000 children in 2014. Though this was much less than in Gadchiroli, it probably caused a small reduction in the late NMR but a major reduction in the 1–4 year CMR.

5. Several aspects of care, such as the presence of Sahiyya at the time of delivery, diagnosis and management of birth asphyxia and neonatal sepsis left much to be desired.

6. The quality of record keeping and their ongoing data entry and monitoring could have been much better.

3.4 HBNCC: SURVEY OF MOTHERS TO MEASURE KNOWLEDGE AND PRACTICES; RECEIPT OF HBNCC SERVICES; AND CLIENT SATISFACTION

Methodology

In this end line survey, mothers who had delivered a live baby in the recent past were interviewed to assess

- their knowledge and practices about the HBNCC;
- the HBNCC services they might have received;
- signs of illness in the baby; and
- the level of satisfaction with the HBNCC services and with MANSI.

Since the data collection for end line evaluation started after the MANSI period was over, in April 2015, these data pertain to the immediate post-intervention state. All newborns born in Jan–Feb 2015 period were identified along with the vital rate survey of 2014. An interview form was developed by SEARCH.
The newly selected and trained supervisors collected the information from mothers who had delivered a live baby in Jan–Feb 2015, by visiting them at home, using this structured interview form. This data collection was done concurrently with the survey of births and deaths (VRS). SEARCH research supervisor placed on site visited all mothers to verify, and also asked a few additional questions. SEARCH did the analysis of the data so collected.

Results and discussion

A total of 224 children were born between Jan and Feb 2015 as per the VRS. Mothers of 173 (77.2%) were interviewed and the survey forms filled. The rest of the mothers, 51 (22.8%) were not available despite three home visits. It is possible they had come to their maternal homes for delivery and returned to their marital homes thereafter. Since there was no base line or control data on these, there is no comparison.
<table>
<thead>
<tr>
<th>Questions</th>
<th>% Correct Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much should mother eat during pregnancy?</td>
<td>76.9% said ‘Full stomach’</td>
</tr>
<tr>
<td>Should the pregnant mother consume iron/calcium tablets?</td>
<td>93.6% said ‘yes’</td>
</tr>
<tr>
<td>Is immunization necessary in pregnancy?</td>
<td>93.1% said ‘yes’</td>
</tr>
<tr>
<td>Where should a woman go for delivery?</td>
<td>83.2% said ‘hospital’</td>
</tr>
<tr>
<td>What should be fed to the baby immediately after delivery?</td>
<td>92.5% said ‘mother’s milk’</td>
</tr>
<tr>
<td>What do you know from birth weight?</td>
<td>76% gave a correct answer</td>
</tr>
<tr>
<td>Which babies are at a high risk?</td>
<td>16.2% gave a correct answer</td>
</tr>
<tr>
<td>What are the signs of illness in a baby</td>
<td>61.3% stated at least one correct sign</td>
</tr>
<tr>
<td>If baby has danger signs, what should you do?</td>
<td>9% mothers said ‘we call Sahiyya’</td>
</tr>
<tr>
<td>Need of immunization in neonates?</td>
<td>94% said ‘yes’</td>
</tr>
<tr>
<td>Fast breathing along with cough in a child suggests?</td>
<td>30% said ‘pneumonia’</td>
</tr>
<tr>
<td>Should the feeding be continued in diarrhea</td>
<td>87.3% said ‘yes’</td>
</tr>
<tr>
<td>Total (mean % correct answers)</td>
<td>67.75%</td>
</tr>
</tbody>
</table>

Table 9: Mothers’ Knowledge
Mothers’ knowledge

The level of correct knowledge as assessed on these 12 questions (as presented in Table 9) was moderately high (Mean: 67.75%). The knowledge score was >80% on six questions, 60%–80% on three questions and was surprisingly low on three of the vital questions. Only 30% mothers knew the signs of pneumonia, only 9% of mothers said they will seek care from Sahiyya if the baby was sick and only 16.2% mothers knew which babies were at high risk. This indicates that though HBNC coverage and the knowledge of mothers were high, the Sahiyyas were not viewed as an important source of care for sick newborn or child. This perception of mothers was consistent with the findings on HBNC coverage and quality presented in the previous section in which management of sepsis and pneumonia was a low key feature. This interpretation is further supported by the responses in Table 11.

Mothers’ practices

The survey yielded following responses about practices by mothers.

The proportion of correct behaviors was very high (above 90%) for 6 of the 10 practices; it was between 80%–90% for three practices; and the mean score of correct practices was 88.6%. For each individual question, the practice score is slightly lower than the knowledge score as one would expect. The mean practice score is higher because the question about the seeking care for sick baby is in a separate table.

Preferred source of care if the neonate was sick

Table 11: From Whom do You Seek care First if the Baby is Sick?

<table>
<thead>
<tr>
<th>Source of care</th>
<th>Proportion of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>73.4%</td>
</tr>
<tr>
<td>Hospital</td>
<td>10.4%</td>
</tr>
<tr>
<td>Sahiyya</td>
<td>8.7%</td>
</tr>
<tr>
<td>Others</td>
<td>1.2%</td>
</tr>
<tr>
<td>Missing</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

Conclusion

Overall, mothers’ knowledge and practice scores were high in MANSI, with scores higher than 80% on most of the questions except on the knowledge about danger signs, pneumonia and seeking care for sick newborn from Sahiyya.
Mothers’ report about the HBNC service by *Sahiyya*

<table>
<thead>
<tr>
<th>Questions to mothers</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you aware of the <em>Sahiyya</em>?</td>
<td>96% aware</td>
</tr>
<tr>
<td>Do you know the name of the <em>Sahiyya</em> in your village?</td>
<td>92.5% knew</td>
</tr>
<tr>
<td>Did you receive any home visits and health service/advice from the <em>Sahiyya</em> in the last six months?</td>
<td>95.4% said ‘yes’</td>
</tr>
<tr>
<td>When did she come to your home?</td>
<td></td>
</tr>
<tr>
<td>➢ During pregnancy</td>
<td>82.7%</td>
</tr>
<tr>
<td>➢ How many times?</td>
<td>3.7 times (mean)</td>
</tr>
<tr>
<td>➢ After delivery?</td>
<td>82.1%</td>
</tr>
<tr>
<td>How many times after delivery?</td>
<td>3.5 times (mean)</td>
</tr>
<tr>
<td>Was the <em>Sahiyya</em> present at the time of delivery?</td>
<td>55.5% said ‘yes’</td>
</tr>
<tr>
<td>Questions to mothers</td>
<td>Responses</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Did Sahiyya give pregnancy and baby related information using the health education booklet?</td>
<td>63% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya give health education on the day after the delivery?</td>
<td>70.5% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya visit you on Day 1 of the birth and examine the baby?</td>
<td>62% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya wash her hands with soap before beginning the examination at each home visit?</td>
<td>70.5% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya measure the baby’s weight using the weighing machine?</td>
<td>91% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya count the respiration rate of the baby by looking at her wrist watch during each home visit?</td>
<td>42% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya say that your baby has danger signs?</td>
<td>6.4% said ‘yes’</td>
</tr>
<tr>
<td>Did Sahiyya immediately visit to see the baby on being called?</td>
<td>31.8% said ‘yes’</td>
</tr>
<tr>
<td>If yes, did she give necessary treatment?</td>
<td>63.7% said ‘yes’</td>
</tr>
<tr>
<td>Mean correct behaviors</td>
<td>88.6%</td>
</tr>
</tbody>
</table>
These responses reveal and validate that 95% of the mothers who had delivered recently had received HBNC from the Sahiyya.

The total number of post-natal home visits (3.5) was less than recorded in the HBNC records (5 to 6 visits), but mothers could have easily mixed-up the visits during pregnancy (mean 3.7) with those after delivery (mean 3.5). The total number of home visits as reported by mothers were a mean 7.2 which was close to the (2+5) prescribed for the low risk neonates in the training by SEARCH.

The presence of the Sahiyya at the time of delivery (55.5%) was reported for a mix of home deliveries and institutional deliveries. They may or may not have been permitted in the delivery room in the case of institutional deliveries. This may have left some of the babies with birth asphyxia uncared for in home deliveries or solely managed by the institutional staff members who may not be skilled or equipped for that.

The various components of HBNC such as health education using a flip chart, baby’s examination on the day one, hand washing by Sahiyya, measurement of temperature etc., were reported by mothers to be at a moderate level (60%–70%). Weighing of the baby was high (91%) but counting respiratory rate in each home visit—a routine part of home visit—was at a lower level (42%).

The detection of danger signs by Sahiyyas was at a low level of 6.4%. This is corroborated by the mother’s memory of various signs of illnesses in her baby (Table 13).

Similarly, mothers report of Sahiyya being called to see the baby or treat the sick baby were 32% and 21% respectively. This, when compared with the incidence of signs of illness (Table 13) appears satisfactory.

<p>| Table 13: Signs of Illness in her Newborn: Mothers’ report (n = 73) |</p>
<table>
<thead>
<tr>
<th>Signs of illness</th>
<th>Incidence reported by mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stopped feeding</td>
<td>1.16%</td>
</tr>
<tr>
<td>Drowsy or unconscious</td>
<td>0.58%</td>
</tr>
<tr>
<td>Umbilical or skin infection</td>
<td>1.73%</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>1.73%</td>
</tr>
<tr>
<td>Repeated vomiting</td>
<td>0.58%</td>
</tr>
<tr>
<td>Fever</td>
<td>4.05%</td>
</tr>
<tr>
<td>Baby became cold to touch</td>
<td>1.16%</td>
</tr>
<tr>
<td>Any sign of illness in the baby</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

Signs of illness in the newborn

Based on mothers’ report of the past, the occurrence of signs of illness was low. In comparison, the HBNCC records for the third year of intervention (1995–96) in the Gadchiroli trial show that the reported incidence of signs of illnesses was 16.5%. Thus detection of sickness in neonate—most often a sign of infection—was nearly half in MANSI. Either there was a recall loss in the reporting by mothers or the incidence of illness among newborns was lower due to the remarkably high level of correct knowledge and practices in mothers. A higher level of institutional delivery might be another explanation. In any event it is a redeeming find, partly explaining the lower levels of infection management reported earlier.

Mothers’ satisfaction

<p>| Table 14: Mothers’ Satisfaction (n=173) |</p>
<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you satisfied with the Sahiyya’s work?</td>
<td>75% mothers said ‘yes’</td>
</tr>
<tr>
<td>Should the services of the Sahiyya continue in the future?</td>
<td>84% mothers said ‘yes’</td>
</tr>
<tr>
<td>Did you benefit from MANSI?</td>
<td>72% mothers said ‘yes’</td>
</tr>
</tbody>
</table>
The three questions (Table 14) asked to measure the level of satisfaction in the beneficiary mothers elicited 72%–84% positive responses.

Conclusions

1. Mothers’ knowledge level was found to be high (68%) with very high levels of correct practices (89%) relevant for newborn care. This is a huge achievement. This is expected to have contributed in reducing the newborn morbidities and possible mortality.

2. The incidence of signs of sickness in newborns as reported by mothers was low.

3. However, the scores were low on the three vital questions – the knowledge about danger signs, pneumonia and seeking care for the sick newborn from the Sahiyya.

4. Though a sizable proportion of mothers reported calling the Sahiyya to see a sick baby, she was not the preferred source of care for a sick baby. It was a doctor.

5. The level of satisfaction with Sahiyyas work and with MANSI was high, in the range of 72% to 84%.
4.1 METHODS

Stakeholders from the state and district health departments and representatives of non-governmental international and local organizations\(^\text{19}\) were invited to participate in the final participative qualitative evaluation. However, representatives of non-governmental organizations could not participate in the evaluation.

The final evaluation team thus comprised of state, district and block trainers of HBNC and the MNHMs representing the project. The team leader

\(^{19}\) Save the Children, UNICEF and Child in Need Institution
deputed the MNHMs outside their functional zones to ensure the prevention of bias or influence. A two-day workshop was held to orient and train the team in qualitative methodologies. Under the guidance of the team leader the team members were acquainted with the tools and trained to use them. The aim of the training was to strengthen the concepts and skills pertaining to qualitative methodology; familiarize the group with the tools and support them to master the tools for actual implementation. The team was provided with a format for expanding the notes following the completion of each day’s activities. Suggestions from team members were incorporated in the tools to finalize them.

The members were subdivided into four teams—one for each zone led by a senior team member. Each team comprised of a facilitator who led the discussions, a note taker and an observer to document unsaid communication. Each team visited the selected villages and conducted one focus group discussion (FGD) with mothers and one with community members. The four FGDs with Sahiyyas and one each with the Sahiya Sathis and auxiliary nurse midwives (ANMs) were conducted by the team leader. Upon the completion of the field work, the team leader debriefed SEARCH and AiF at a meeting held at Gadchiroli in July 2016.

Methodologies of information collection

The evaluation employed three key methodologies which include FGDs, interaction (where less than 8 people were available), and in-depth interviews. A stratified random sampling was used to select the villages from the four zones of MANSI for the qualitative assessment. Villages were stratified by zones and each zone was further stratified based on the MNHM’s perception of the Sahiyya’s performance as good, average, and bad. Based on the population, three villages were selected in zones 1 and 4, one of each category; and four villages were selected in zones 2 and 3, one each of bad and good categories and two from the average category (Table 15).

Villages selected

Focus Group Discussions: Altogether 35 FGDs were conducted. In each of the 14 villages selected, the team conducted FGDs with pregnant women and mothers of neonates, infants and under-5 children; and with important members of the community including the SHG members, Anganwadi worker, Gram Panch (village representatives),
village health, nutrition and sanitation committee (VHNSC) members and other opinion makers. The focus groups for the above-mentioned categories were conveniently sampled and identified by the MANSi staff.

Table 15: Villages Sampled in Seraikela

| Zone 1       | Ghumandi, Hathia, and Ghodalang |
| Zone 2       | Bheladih, Malukpahadi, Sakladih, and Sobhapur |
| Zone 3       | Pahadpur, Guradih, Kendposi, and Mahuldiha |
| Zone 4       | Kulaghuju, Mudkum, and Badabana |

In all four FGDs were conducted with Sahiyyas, one FGD from each zone. One FGD each was conducted with Sahiyya Sathis, ANMs and MNHMs. The team met 151 mothers, 157 community members, 33 Sahiyyas, 8 Sahiyya Sathis and 8 ANMs in all. The team held FGDs with 357 people during the qualitative evaluation.

Interactions: Altogether 10 interviews with district level health staff (4 people; 3 interviews), state level health staff (1), and MANSi management staff (6) were conducted. A list of interviewees is provided in Annex 2. One interaction was held with the four zonal coordinators of MANSI.

Documents reviewed

Project documents
- Implementation plan
- Annual reports
- Case studies
- HMIS

Timeline of qualitative activities

Table 16: Timeline of Qualitative Activities

<table>
<thead>
<tr>
<th>Before the start date</th>
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<tbody>
<tr>
<td>1. Collation and review of relevant documents/reports</td>
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<tr>
<td>2. Development of evaluation design, work plan, and division of work among members</td>
</tr>
<tr>
<td>3. Adaption of tools</td>
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June 8–9, 2015
1. Meeting with state level officials

June 10, 2015
1. Preparation for qualitative training

June 11–12, 2015
1. Training of evaluation team

June 13–16, 2015
1. Data collection, focus groups, and data synthesis

June 17–19, 2015
1. In-depth interviews with TSRDS and AIF staff; ANM FGDs, MNHM FGDs

July 14–15, 2015
1. Debrief with SEARCH and AIF
Analysis of qualitative data

The data was synthesized for each zone. However, there were no zonal variations observed in the perceptions and experiences of respondents. Three categories of communities were sampled to conduct the FGDs, based on the performance of the Sahiyya as perceived by the MNHM. The Sahiyyas of these communities were categorized as poor, moderate, and well performing. The respondents from communities where Sahiyya was considered to be well-performing were more knowledgeable and unanimously reported having adopted healthy practices. However, there was no perceptible difference between the responses of the respondents from the other two categories of communities. In other words, the ‘moderate’ communities exhibited similar levels and knowledge and attitudes as the ‘poor’ communities. There were no zonal differences in the experiences and responses of Sahiyyas.

Limitations of the qualitative evaluation

The quantitative survey was carried out in the months of April and May. However, the analyzed quantitative data and the findings were not available at the time of the qualitative field work. The reasons for some of the results such as the magnitude of reduction in U5MR therefore could not be explored during the qualitative evaluation. The scheduled interview with the CSR head of TSRDS could not be held owing to his unavailability. The identified issue of gaps in monitoring could not be therefore triangulated. Details of the issue are described under the program management section.

4.2 QUALITATIVE FINDINGS

Perceived changes in maternal health knowledge, attitudes, and practices

In response to the question, ‘describe the changes in maternal health experienced in

the last 4 years’ every group and individual met during the final evaluation, reported the increased level of knowledge, demand, and utilization of services.

They reported awareness about

➢ the need for 2–3 hours of rest during pregnancy
In addition to identifying changes in levels of their knowledge in the past 4 years, women shared the changes in attitudes and health behaviors associated with maternal health. The significant changes in practices and behaviors include:

- Women eat more during pregnancy now and are allowed to eat as per the Sahiyya’s advice. Comparing the current status with the situation 5 years ago, women reported that earlier they were warned of difficult deliveries if they ate more and put on weight. This myth was dispelled through the repeated interaction of Sahiyya and families. Now women understand that not eating adequately results in the birth of a low birth weight baby and in some cases death of the baby as well.

- Women were earlier unwilling to seek antenatal care owing to the fear of injection (tetanus toxoid) and fear of putting on weight (iron folic acid). They reported that there is a huge demand for antenatal care now owing to increasing awareness about the importance of antenatal care and monitored pregnancy. Several respondents

- at least four antenatal visits
- importance of three balanced meals consisting of daal and green vegetables during prenatal and postnatal periods
- importance of institutional delivery
- importance of taking iron folic acid tablets
- danger signs of pregnancy such as swollen legs and hands, increased blood pressure, antenatal and post partum hemorrhage.
- the need for cleanliness during a home delivery
- dates of last menstrual period and expected date of delivery

Mothers were not only well informed, but also they expressed their desire to learn more. As a respondent said, ‘We want to know more, so that we can keep ourselves and our children healthy; in fact we keep asking Sahiyya didi if she has received any further training so that she can share her knowledge with us.’
reported seeking care from private clinics or the district hospital for antenatal checkups as they feel the antenatal assessment done by the ANM during her monthly visits are not adequate.

- Respondents reported a shift from home delivery to hospital-based delivery, ‘hardly any deliveries occur at home now, any home delivery is accidental and not intentional’.
- During occasional home deliveries, respondents reported that a clean surface, clean clothes, soap, a new blade is organized. Unlike earlier times, they are supported not just by the dai, but also the Sahiyya. They are not starved for three days post partum and no longer served food on the dirty ground. These practices have given way to adequate and nutritious food and support from the family in child care following delivery.
- Women listed swollen legs, dizziness, high blood pressure, hemorrhage, prolonged labor pains and breech presentation as danger signs of pregnancy. They seek the advice and support of the Sahiyya to address the danger signs and emergencies.

Conclusions

1. There is a perceptible change in the levels of knowledge about components of prenatal and postnatal care; and danger signs in pregnancy and in the postnatal period.
2. There is an increased demand for antenatal services and improved utilization of services; mothers and their families seek Sahiyya's advice when they experience health emergencies or problems, although women mention a facility or a private provider as the unprompted response.
3. There has been a perceptible increase in institutional deliveries and perceived decrease in maternal mortality in their communities as revealed by mothers during FGDs.
Knowledge, attitudes, and practices (KAP): Changes in neonatal health

The respondents reported perceived changes in knowledge, practice and behaviors associated with neonatal health. Women knew about the importance of early and exclusive breastfeeding, delayed bathing of the baby and keeping the baby warm. The exhibited knowledge about care of the umbilical cord, care of the eyes, need for hygiene while handling the baby and danger signs in a neonate. ‘A newborn is considered weak if the birth weight is below 2 kg.’

Respondents described that practices such as applying goat feces to the umbilical cord, branding the newborn with iron rod to ward off evil, applying *kaajal* to an infected eye, bathing the child immediately following the birth, keeping the child naked after birth are not followed anymore. Mothers are washing their hands before handling the baby and cleaning their breasts before breast feeding as well. They reported that nutritional practices have also changed and the colostrum (*khassi doodh*) is no longer discarded, the newborn is not given goat’s milk or honey, and instead exclusively breast fed. Most women reported feeding their child within one hour of the birth.

Furthermore respondents identified fast breathing, inability to feed, fever or hypothermia (*thanda pad jaana*), and diarrhea as danger signs in a newborn. They sought the advice of the *Sahiyya* or visited a health facility to resolve the health issue as opposed to the earlier practice of seeking care from traditional or faith healers.

Very few focus groups reported a neonatal death in their community in the preceding period. They added further that even low birth weight babies are surviving in their communities with the support of the *Sahiyyas.*
Conclusions

1. There has been an improved awareness about HBNC practices, danger signs and birth weights; and neonatal care practices during the project period.
2. Unhealthy neonatal practices such as applying goat dung on umbilical cord, bathing the baby early, and discarding the colostrum have become a rarity.
3. Families seek care from the Sahiyya and facilities for neonatal health problems, although the response ‘Sahiyya’ had to be prompted.
4. Smaller babies are surviving with support from Sahiyya and very few neonatal deaths are reported from the communities.

KAP: Changes in child health

Mothers reported a perceptible change in seeking childhood preventive and curative care. The communities which were reluctant earlier to immunize their children now demand more accessible services.

‘The monthly immunization session is not held at our community, we travel to the adjacent community; please ask the government to organize a session within our community as well.’

Mothers report encouraging hand washing among children, a behavior promoted by the Anganwadi worker and the Sahiyya. They are further aware of the availability of Oral rehydration solution (ORS) with the Sahiyya. Some communities reported that ORS is available with the Anganwadi worker as well.

The first response to the question ‘what do you do when your child is sick’ among the focus groups was ‘take the child to the doctor’. The responses pertaining to seeking medication from Sahiyya for fever, diarrhea and pneumonia were forthcoming only upon probing ‘how does the Sahiyya support you?’

Women reported that the children in their communities continue to be malnourished and sought information and services to overcome the problem. They did add that the Sahiyya and the MNHM had supported them in seeking higher facility care for severe malnourishment.

The Sahiyyas identified several maternal, neonatal and child health care behaviors and practices which have changed in their communities in the past 5 years. Key changes include:

1. Maternal care
   i. Women consume iron and folic acid tablets as they understand the importance of good nutrition and prevention of anemia in pregnancy.
   ii. Mothers consume adequate food, rest during pregnancy, and seek ante-natal care. The beliefs that eating more will crush the child in the womb and working during pregnancy will facilitate delivery no longer exist. Many women seek antenatal care from private clinics as the ANM provides only basic care.
   iii. More women adopt facility-based delivery as compared to home-based delivery as they are more aware of complications, are encouraged by the JSY incentive, and believe that they will get better care at the facility (injections and medicines).
   iv. In a rare event of home-based delivery, the help of the ANM is sought. If a dai conducts the delivery then she employs the five clean practices. The delivery is not conducted on the muddy floor. The Sahiyya is also informed to help with the newborn. Practices such as stuffing the mouth of the woman with hair to facilitate
placenta expulsion are not practiced anymore. The Dai encourages the woman to seek facility-based care when the Sahiyya identifies a need. The reasons cited for home delivery are—premature labor; Sahiyya not informed about the labor, therefore not able to facilitate facility delivery; and woman sent back from facility due to false labor pains and delivers at home.

v. Mothers are no longer kept starving for three days in the post partum period. Therefore they are able to breastfeed and newborns are not given goat’s milk. Breastfeeding problems are also being resolved at the community level as the Sahiyyas help the mothers with such problems.

vi. Mothers are also spacing their children and therefore do not become malnourished.

2. Neonatal care
   i. Mothers are now aware of the birth weight of the neonate.
   ii. Newborns are not given a bath on the first day as was the practice earlier.
   iii. The umbilical cords are kept clean and the practice of applying goat’s feces is not longer prevalent.

3. Child care
   i. There has been an improvement in the nutritional status of children; the mothers now introduce complementary feeding at six months of age, as the Sahiyyas make the mothers aware of the importance of complementary feeding.
   ii. Families seek health care for children with illnesses. Mothers are aware of danger signs during childhood illnesses. They are also aware of the importance of ORS and homemade salt–sugar solution in preventing dehydration.
Conclusions

1. Child care practices such as hygiene, cleanliness, introduction of supplementary nutrition from six months of age and acceptance of and demand for immunization services are reported to be considerably increased during the project period.

2. Mothers say they know fast breathing as a sign of pneumonia and seek care for fever, fast breathing and diarrhea; they say they know how to prepare salt–sugar solution and seek ORS for diarrhea and medication for pneumonia from the Sahiyya.

3. Communities seek facilities or private practitioners for childhood illnesses. Although they do approach the Sahiyyas for advice, the Sahiyya is not the preferred source of care for sick newborns or children.

4. Malnourishment among children continues to be a challenge, though mothers and communities are seeking care from nutrition rehabilitation center for addressing severe malnourishment.

Services available for maternal, neonatal, and child health

The range of services provided by the Sahiyya was reported as the most significant change in the past 4 years. The mothers informed the team that the Sahiyya provides information about healthy behaviors. She makes home visits when a woman is pregnant and uses flip charts to counsel the woman and her family members about nutritious diet, need for antenatal check up, tetanus injections, iron folic acid tablets, and institutional deliveries. The women were aware that the Sahiyya had been trained to provide neonatal care and has equipment and medications to support neonatal and child health. While Sahiyya was identified as the first point of contact
for advice during maternal and neonatal emergencies, respondents identified local doctors or facilities when asked the course of action for a sick under-5 child. However, Sahiyya was identified as a contact for advice and care when probed further.

The respondents were appreciative of Sahiyya’s support during the home delivery, ‘the dai takes care of the mother and the Sahiyya takes care of the baby, she uses the suction pump to resuscitate the baby if it does not cry following birth’. They further cited several examples of how a low birth weight baby had been nurtured to health by the joint efforts of the Sahiyya and the MANSI didi. The list of support provided by the Sahiyya, as reported are:

- Visits the homes of pregnant mothers and neonates
- Supports home delivery
- Escorts women to facilities for delivery
- Accompanies sick neonates to the facility
- Provides advice during illness
- Provides medicines for fever, sepsis, and ORS for diarrhea
- Measures temperature and the weight of the neonate
- Provides a blanket and warm bag to neonates with hypothermia
- Provides GV paint for infected cord and medication for infected eyes
- Helps mothers with breast feeding problems
- Educates mothers, mothers-in-law, and husbands individually and through community meetings using flip charts and information material

One group of mothers met during the evaluation described how a reticent family of a sick low birth weight infant was motivated by the team of Sahiyya and the MNHM to seek care at the nutrition rehabilitation center and consequently the baby was nurtured back to health. Very few mothers however proffered instances of seeking care from the Sahiyya for diarrhea or pneumonia for older children, although they said they were aware that she had some medication available with her. While mothers were readily reporting utilization of Sahiyya’s services for mothers and neonates, they had to be probed further to elicit the role of the Sahiyya in caring for sick older children. It appears that families prefer visiting a private provider or a facility to seek care for a sick child.

The antenatal care provided by the MANSI clinic was appreciated by the communities as well as the mothers. They reported that the antenatal checks carried out by the ANM during the village health and nutrition days (VHNDs) were limited to measurement of blood pressure and weight, iron and folic acid tablet distribution and health education. The antenatal care provided by the ANM did not include an abdominal examination (as the anganwadi center does not have the facility) or urine/blood tests (as the ANM does not have the diagnostic kits). They reported undergoing diagnostic tests, receiving additional drugs such as calcium and a comprehensive per abdominal examination at the MANSI clinic. Following the phasing out of the clinic, women have had to go to the district hospital or a private clinic for antenatal examinations, which they consider inaccessible. Women were vociferous about the need to resume the clinic services.

Mothers identified some gaps in services as well when comparing the changes across time. They reported that the Mamta Vahan had been discontinued and several mothers had not been paid the JSY incentive which was influencing some mothers against accessing facility-based care. However, women felt that there is a huge demand for facility-based services now and families are willing to
spend money to deliver in a facility and seek treatment. Respondents were not satisfied with the services available at the district hospitals and reported rude behavior, lack of medicines, inadequate access to ultrasound machines and need for bribes as some of the issues with the quality of care.

While the content of information shared by the focus groups across the villages was similar, the depth of information provided by communities where the Sahiyya was identified as a good performer was higher compared to the other villages.

The FGDs with indirect beneficiaries revealed the following:

- The communities with well-performing Sahiyyas were as comprehensively informed as the mothers about the services available and health behaviors/practices. They provided insights into the continuing challenges. The communities in the other villages were not as aware of MANSI activities or details of Sahiyya services, unless the respondent was a direct beneficiary of Sahiyya services. It must be noted that respondents were aware that Sahiyya had been trained to manage sick neonates.

- Furthermore, across all community focus groups, the respondents could rarely cite examples of community participation in maternal and neonatal care.

Changes in health services perceived by Sahiyyas across project period

The Sahiyyas reported that the ANM visits the village on the VHND and provides services. The anganwadi center provides supplementary nutrition as well as growth monitoring services. The anganwadi worker works along with the Sahiyya to promote health awareness. ORS and antibiotic is available with the Sahiyyas for diarrhea and respiratory infections. The MANSI clinic, which was discontinued, was providing antenatal check up, medicines, and diagnostic tests. In the perception of the respondents, there has been an overall reduction in maternal, neonatal and child deaths, as diseases and complications are identified in a timely manner and care is sought for the identified conditions.

The Sahiyyas reported continuing challenges with the district hospital staff and the ANMs in the form of rude behavior, non-performance or asking for money for services, incorrect birth weight documentation to avoid additional care to low birth weight babies, referral to another facility in the absence of an ultrasound report among others.
The availability of the Sahiyya and her expanded scope of services at the community level; availability of medicines and medical equipment and the availability of comprehensive antenatal services by the MANSI clinic have been much appreciated by the communities. MANSI created an increased number of actively functioning health providers at the community level—Sahiyya, Sahiyya Sathi, and the MNHM.

Sahiyya is sought as a first point of contact by mothers for issues pertaining to maternal and neonatal advice; although local doctors or facilities are approached for care for sick newborn or child. She is appreciated for providing antenatal, intra-partum and post natal support.

While the availability of Mamta Vahan and the JSY incentive were facilitators for changed behaviors, their unavailability in the 10 months prior to the evaluation has become a challenge for sustaining behaviors.

The lack of quality of facility-based services and lack of cooperation from ANMs continue to present challenges.

It should be stated that the qualitative findings on knowledge, behaviors, demand and care seeking by mothers, care provided by Sahiyyas, and the satisfaction of the community about MANSI activities presented so far mostly match with and corroborate what was independently recorded in the quantitative studies. It should be noted that each team was unaware of the findings of the other at the time of data collection.

Support for maternal and child health from the communities

A few examples were cited as support from the community (though not all groups reported such instances). These initiatives included loans from SHGs for maternal, neonatal and child emergencies; road construction to facilitate the approach of the Mamta Vahan; and funds allocated by the VHNC to facilitate care of a sick child.

Support received from Sahiyya Sathis and ANMs

- The Sahiyyas reported receiving supervisory support from the Sathi. The Sathi carries out joint home visits, checks the records and conducts monthly
meetings to collate data. Questions rephrased to triangulate the role of the *Sahiyya Sathi* however revealed that most *Sathis* visit a sample of households during their visit and mostly supervise record keeping during the monthly visits. This was further reflected in the hesitation in responses of the *Sahiyyas* when asked about the support received from the *Sathis*, as compared to the MNHM*s*. They added that while the MNHM*s* would immediately visit them upon seeking support for managing a high risk newborn, the Sahiyya Sathi’s support was not as forthcoming.

➢ While few *Sahiyyas* appreciated the support received by the ANMs, many reported initial and continuing difficulty in working with the ANMs. They felt mistreated by the ANM. ‘She shouts at me if I am not present when she arrives, although I may be gathering the women of the community for the VHND’. ‘She threatens that she will not sign our HBNC format if we do not act according to her wishes’. ‘She is not able to help us with high risk babies as she is not available and her only advice is referral’.

➢ Eight ANMs from four sub-centers were met during the final evaluation in a group. Of these sub-centers, only one has facility for conducting a delivery. In all the eight ANMs had conducted seven deliveries in the past year. Describing their role in maternal, neonatal and child healthcare, they reported registering women for antenatal care, conducting antenatal checks, immunizing children, supervising *Sahiyyas*’ work, managing malaria, providing OPD services at the subcenter and implementing family planning interventions. They prepare the due-list for services with support from the *Sahiyya*, but felt that some *Sahiyyas* were not as supportive. Their work is limited to gathering children and women for VHNDs. Although they identified some problems in the functioning of the *Sahiyyas* the ANMs felt that the *Sahiyyas* have facilitated early registration of pregnancy, healthy neonatal practices (preventing early bathing, kangaroo care, support to breast feeding, case management of sick newborns) and being community based, have become the first respondents.

**Conclusions**

1. Though communities were aware and sympathetic, there was seldom active initiative or support to the work of *Sahiyya*.
2. Community and *Sahiyya* both appreciated MANSI clinic.
3. *Sahiyya Sathis* did support the *Sahiyya* in her work but to a lesser extent than the MNHM*s*.
4. Several barriers of expectations and behaviors impeded harmonious collaboration with ANMs.

**Factors facilitating and impeding *Sahiyya*’s functioning**

**Facilitators**

➢ Training from MANSI, the support of MNHM*s*, and the availability of equipment (provided by MANSI) were cited as the facilitating factors.

➢ The MANSI training was also identified as having contributed to the self confidence and communication skills of the *Sahiyyas*. ‘We would never talk to anyone in our community, never venture out of the village. The training has given us so much confidence...above all it has given us an identity in the village. We are respected by the community and recognized for our work’.

➢ The support of the MNHM was similarly appreciated. ‘MANSI Didi was always available to us, whether on phone or physically anytime we encountered
difficulties in the field. The Sahiyyas reported conducting joint home visits with the MNHMs, reviewing records, addressing high risk neonates and receiving hand holding support and training inputs as well.

- The availability of MANSI clinic was considered to be very useful since the ANM was not providing comprehensive antenatal care.

**Impeders**

- The continuing challenges include,
  - lack of refresher training, the filling of multiple forms (one set for MANSI and one for the government),
  - the delays in incentive disbursements,
  - the unavailability of formats from the government which forces the Sahiyya to photocopy the format through out-of-pocket expenditure,
  - the behavior of facility-based functionaries, and
  - in some instances the lack of support from the ANMs.
- The Sahiyyas further requested for training in skilled birth attendance (SBA) and permission to provide injections and use the bag and mask.
- Inability of the Sahiyya Sathi to dedicate ample time to each Sahiyya is owed to the fact that they have to manage the needs of their own village as well as the Sahiyya’s.
- Sahiyya Sathis are not given any additional training for carrying out their role.
- Most deliveries take place at the district hospital as ANMs are not available to conduct deliveries at night.
- Abdominal examination not conducted at the village level as facilities were not available at the anganwadi center. However, the ANMs said they could perform a per abdominal examination at the subcenter level.
- ANMs had not been paid salaries in the past five months.
- Lack of training to ANMs in HBNC has resulted in initial difficulty in supervising the Sahiyya’s work.
- Non-payment of JSY funds has resulted in the disinclination of women to opt for institutional deliveries.
4.3 CHALLENGES TO AND LESSONS FOR EFFECTIVE PROGRAM IMPLEMENTATION

Program issues

- The Government of India’s (GoI’s) HBNC program was launched in 2011 and community level implementation initiated in 2012. Prior to the launch of the GoI program, there was no provision for incentivizing the Sahiyya for addressing neonatal health. While SEARCH and AIF wanted to incentivize her through MANSI, TSRDS did not agree to this arrangement as clarity on whether this could be sustained beyond project period was not available. However, with the inception of HBNCC in the GoI program, an incentive for conducting seven visits to a neonate became available but actual payment was much delayed. Moreover, this did not extend to management of a sick neonate. Thus, overall, financial incentives were not employed effectively in MANSI.

- Since Sahiyyas had already been selected by the Government of Jharkhand (GoJ), MANSI could not participate in the process and this meant that MANSI had to work with a proportion of Sahiyyas who were illiterate.

- Although initially planned, the project did not intervene at the level of facilities, which meant that the demand generated at the community level for institutional deliveries and neonatal/child care was not met with district officials are not confident whether the home visits are being made by the Sahiyyas as per the plan.

- The case management formats need to be modified in a checklist format.

- There is a need to map remote areas where access to care is difficult, to justify the use of suction tube by the Sahiyyas for asphyxia management.

- There are various challenges to HBNC M&E across the state. There is a lack of capacities within the district apparatus to utilize monitoring data for decision making. The quality of data as well as the timeliness of reporting is lacking.

- There are gaps in logistics management. Replenishment of equipment and other collaterals is not occurring as per the needs.
optimal qualities at the facility level. The opportunity to address this at the district and state level did not yield results, as the district level forum met only thrice during the project period.

- The supervisory cadre of Sahiyya Sathis was introduced by the State Mission in 2012, which meant that they had to be trained as well. These workers shouldered double responsibilities as they were also the Sahiyyas of their communities. While they were trained in HBNC, the project did not plan any training for building their capacities as a supervisor. Thus, the very crucial functionary, the field supervisor, could be used in only a limited manner.

- The initial strategy of working with community-based operating partners such as SHGs lost its focus in the last 3 years of the project. Of the 271 SHGs in Seraikela block, 161 were disbursing health related loans in 2014 compared to 86 groups in 2010, an increase of 87.2%. However, we cannot conclusively attribute this to any direct efforts of MANSi. It is possible that the non-availability of Mamta Vahan in the past 10 months and the existing demand for institutional services have driven the loans for health by the SHGs.

Management

- The detailed implementation plan of the project was not discussed at the state and district level which would have potentially prevented delay in actual implementation of HBNCC at the community level.

- TSRDS has well established HR policies. However, project staff are not considered TATA employees and therefore do not receive the range of benefits reserved for employees. This created initial disgruntlement among the field level project staff. However, this was resolved by introducing bonus and access to TATA tertiary care facilities to ensure some form of incentive. There has been minimal turnover therefore.

- The project MIS is collected and collated at Jamshedpur and then circulated among the field staff members in Seraikela. Although the senior program management does not think there are any challenges in MIS or communication of project strategy, the field team feels otherwise.

- The field team receives collated MIS data to identify required work at the zonal and MNHM level; however they reported lacking the knowledge of why they were doing what they were doing. One such example identified was the expected proportion of sick newborns. The field teams lacked this knowledge and therefore could not monitor and identify the fact that not all sick newborns were being identified. The field team also reported not having copies of the detailed implementation plan.

- The MNHMs revealed that they were not confident about their MIS capacities. Their programmatic feedback was sought but not addressed. Not all field level issues received support. At the time of the evaluation, some uncertainty as to their future was also expressed. Since then most MNHMs have been accommodated under the scaled up MANSI.

- Delays in financial disbursals, financial management, prolonged procurement processes and communication between partners were also cited as barriers.

- Finally, while the program level staff members of the GoJ were well informed about the program and expressed appreciation and support, the senior leadership at the state level seemed less informed. A concerted advocacy effort needs to be made at the state level.
Conclusions and Recommendations

MANSI was an intensive implementation pilot (2009–2014) in one poor, semi-tribal block of the Seraikela Kharsawan district in the Jharkhand state.

MANSI aimed to improve maternal, newborn and child survival by

1. Introducing home-based newborn and child care (HBNCC): This was done by providing intensive training to Sahiyyas and strengthening the field supervision through project supervisors (MNHMs) and later, through Sahiya Sathis. Record keeping and MIS were introduced.

2. Periodic maternal health check-ups: The MANSI clinic, a periodic maternal health mobile clinic, was discontinued after some time.

3. Strengthening community level institutions and government’s institutional capacity: Not much was done systematically for these two.

MANSI also aimed to develop an example of public–private–civil society partnership. For that reason, four partners—the state health mission of the GoJ, the corporate partner the TSRDS, a technical NGO partner – SEARCH, Gadchiroli, and a facilitating partner the AIF came together.

Though the project was initiated in 2009, HBNCC was introduced in 2011.
We evaluated MANSI by way of quantitative studies to assess the impact, coverage and quality of HBNCC, and by way of qualitative studies to assess the views of various stakeholders.

Most of the quantitative findings matched the findings of the independently conducted qualitative studies, thus corroborating each other and confirming the robustness of evaluation findings.

5.1 SUCCESSES

Impact

- Child mortality rate in MANSI area showed a large reduction during 2011–2014.
- Neonatal mortality rate reduced from 40.7 per 1,000 live births in 2011 to 22 in 2014 (46% reduction);
- Infant mortality rate reduced from 53.6 per 1,000 live births in 2010 to 32.7 in 2014 (39% reduction almost touching the national goal of 30 per 1,000); and under-5 mortality from 67.5 per 1,000 live births in 2010 to 38.1 in 2014 (43.6% reduction).
- All reductions were statistically significant.
- MANSI reduced neonatal, infant and child mortality by nearly 40%–50%. These reductions were five times the reduction in rural Jharkhand during the same period (SRS) where the JSY was implemented, and at least three times the estimated impact of IMNCI by the WHO.

Capacity building

- Training of the field workers was effective. More than 90% of them showed high level of knowledge and skills (Grade A or B). This indicates that the training—contents, methods and the system—was effective.
- The project constituted an effective team of the Sahiyya, and their supervisors, the MNHM and the Sahiyya Sathi.
5.2 AREAS OF IMPROVEMENT

- Reduction in the following rates occurred by a lesser degree and the residual rates were still high at the end of the project—
  - the still birth rate, the late- and post-neonatal mortality rate. Better asphyxia management to reduce the apparent still births, better detection of neonatal sepsis and its management with gentamicin to reduce the late neonatal deaths during the 7–28 day period, and improved coverage/quality of management of pneumonia and diarrhea in the 1–11 month-old babies are needed to make further improvements in these rates.

- Birth weights recorded appear to be of questionable quality. The discontinuity of care, between the institutional delivery and the home-based care thereafter, affects proper birth weight recording. Correct measurement and recording of birth weight needs to be ensured. This will help improving the estimates of the low birth weight, the management of babies less than 2,000g at birth and the weight gain during neonatal period.

- Number of home visits to the high risk neonates should be increased. As many as 26 out of 37 (70%) neonatal deaths in the last year of the project occurred in neonates who did not receive adequate numbers of visits. Ensuring the recommended 13 home visits to the high risk and/or sick neonates will prevent some of these deaths and further reduce the NMR.

- Though Sahiyyas provide valued support to mothers, the preferred source of care for sick neonates and children remains the private doctors and hospitals. With the improvements listed above, the Sahiyyas could provide better care for the sick.
neonates and children who cannot be referred due to remote villages or other reasons, especially among the preterm neonates, those with birth weight less than 2,000 g, those with suspected sepsis or asphyxia and children with pneumonia, diarrhea, and malnutrition.

- Refresher training is needed to keep the field workers’ knowledge updated. Similarly, the illiterate / semiliterate Sahiyyas need appropriate methods of training and record keeping. Use of the hand held devices for the refreshing of knowledge and keeping records may be useful.

- The HBNC record keeping and the correct use of data by the field supervisors and the project managers need much improvement.

- The project field supervisors (MNHMs) were reported to be more easily available and supportive to Sahiyyas. It will be a challenge to get the same performance from the regular supervisors, the Sahiyya Sathis and the ANMs.

- The project did not provide any training to the ANMs. A lack of cooperation between Sahiyyas and ANMs was often reported. Better integration of the subcenter and the primary health center staff, their orientation and change in the attitudes and behaviors will be desirable.

- While the project coordinated effectively with the district health team, the coordination at the state level was less. A more effective engagement at the state level would have better facilitated the resolution of the policy or implementation issues and the ultimate translation of methods and lessons from MANSi into the state program.

- The project management areas which could have been more effective include:
  - The use of mother/newborn records for monitoring the program coverage and quality.
  - Better use of financial incentives to Sahiyyas to encourage higher performance. Introduction of financial incentives to Sahiyyas for being present at the time of birth, and for making more home visits to high risk neonates.
  - Strengthened support to improve competencies and confidence in Sahiyyas to provide management to moderately sick neonates and children.
  - Improving the ability of field supervisors to detect the errors by the Sahiyyas and correcting them; and of the rigorous use of records, data and MIS by the project manager to support detection of sick neonates.
  - While the MANSI clinic was useful as it made medical officers available to the communities, this intervention should have been integrated with government services and focused on building systemic capacity to deliver maternal health services.
served by Sahiyya or HBNCC in rural Jharkhand, quantitative evaluation used the end line surveys and, in case of mortality rates, the before (2011) and after (2014) comparison to assess the impact.

- Some indicators (such as the coverage and case fatality of pneumonia and diarrhea management in children or the referral rates of sick neonates) could not be evaluated.
- Aspects such as project management, cost analysis, logistics and supplies etc could not be covered as part of this evaluation.

5.4 ROLES OF PARTNERS

Since the main intervention in MANSI was HBNCC through Sahiyyas, which was also introduced by the state NRHM in the entire state almost at the same time, the observed difference in the reduction in NMR and IMR in the MANSI area compared to rural Jharkhand can be attributed to the partnership approach in MANSI. The HBNCC in Seraikela block, when managed by the partnership including the state health mission, yielded high coverage of HBNCC, steep reduction in mortality rates and high level of community satisfaction.

The impact of MANSI would be gratifying to each of the four partners. Each brought in its unique strengths and, together, achieved what was beyond them individually. MANSI partnership potentially offers several lessons especially for the public–private and NGO partnership. It also offers a successful example of a CSR initiative.

The four partners in this project, their respective roles, contributions, mechanisms of collaboration and decision making, partnership management, strengths and limitations offer a fascinating opportunity for an in-depth study. That would be a separate project.
Goals and Objectives

Overall Goals of the MANSI Evaluation (Restated)
To ascertain whether MANSI has created a demonstration model of replication/scaling of HBNCC in Jharkhand by way of assessing the processes and outcome of transfer/replication of Gadchiroli model in Seraikela.

Goal of the Project
To reduce maternal and child mortality and morbidity in Seraikela block of Seraikela Kharsawan District in Jharkhand.

Restated as: To reduce neonatal and child mortality and improve maternal health in Seraikela block.

Objectives of the Evaluation
Assess the reduction in neonatal and child mortality rates and current coverage and quality of maternal and neonatal services.
(Assess morbidity profiling, incidence and case fatality if HBNC records are of good quality)

Intermediate Results of the Program
To enhance knowledge and skills of Sahiyya in order to empower them in providing home-based newborn and child care (HBNCC) in their respective communities.

Restated objective: To establish the HBNCC service program in the Seraikela block maintaining the content and processes as in the original SEARCH model

Objectives of the Evaluation (in the context of outcomes)
- To assess the knowledge of Sahiyyas and MNHMs in key neonatal and child health interventional areas
➢ To assess the skills of the Sahiyyas and MNHMs in key neonatal and child health intervention areas.

➢ To assess the coverage of service provision by Sahiyyas (neonatal and maternal)

➢ To assess the quality of service of Sahiyyas and MNHMs

➢ To assess the knowledge and practices of the traditional birth attendant in safe delivery and neonatal issues.

➢ To assess the knowledge of mothers on neonatal health issues and assess the neonatal services received by recent mothers

➢ To measure the quality of supervision of MNHMs and Sahiyya Sathis

Cross-cutting Issues

Program management: Assess planning, staff training, supervision, human resources (vacancies) and staff management, logistics (supplies to Sahiyyas in the form of equipment, medicines, formats and aids), information management, technical support.

Partnership management: Assess how the project strengthened partner capacity, health system, the functioning of reporting and coordination mechanisms, and created sustainability.

Behavior Change Communication: Assess the BCC plan, implementation, levels of knowledge, attitudes, and practice (KAP) at the end of the project.

Program Output

Planned activities

Objective of the evaluation (in the context of output)

Proportion achieved; facilitators and impediments to the accomplishment of activities
### Annex 2

**People Interviewed**

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Organization</th>
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<tbody>
<tr>
<td>Dr Sumant Mishra</td>
<td>Director in Chief, Health Services</td>
<td>MoHFW, GoJ</td>
</tr>
<tr>
<td>Akai Minz</td>
<td>State Program Coordinator</td>
<td>MoHFW, GoJ</td>
</tr>
<tr>
<td>Dr Jaya Mohanty</td>
<td>State Technical Officer RMNCH</td>
<td>MoHFW, GoJ</td>
</tr>
<tr>
<td>Mahender Hensda</td>
<td>State Program Manager</td>
<td>Save the Children</td>
</tr>
<tr>
<td>Ranjan</td>
<td></td>
<td>Child in Need Institute</td>
</tr>
<tr>
<td>Dr H. B. Barwar</td>
<td>Civil Surgeon, District Seraikela Kharsawan</td>
<td>Dept of H &amp; FW, GoJ</td>
</tr>
<tr>
<td>Dr K. K. Sehgal</td>
<td>District RCH Officer</td>
<td>Health Department, Seraikela Kharsawan district</td>
</tr>
<tr>
<td>Doman Chandra Mahato</td>
<td>District Program Coordinator</td>
<td>Health Department, Seraikela Kharsawan district</td>
</tr>
<tr>
<td>Dr Pradeep Kumar</td>
<td>Medical Officer Incharge</td>
<td>CHC, Seraikela</td>
</tr>
<tr>
<td>Dr P. C. Mohapatra</td>
<td>Head, F &amp; H (CSR)</td>
<td>Tata Steel</td>
</tr>
<tr>
<td>Subrat Mahapatra</td>
<td>Head, Health (CSR)</td>
<td>Tata Steel</td>
</tr>
<tr>
<td>Bipin Rawat</td>
<td>Project Manager, MANSI</td>
<td>TSRDS</td>
</tr>
<tr>
<td>Anupam Sarkar</td>
<td>Program Manager, MANSI</td>
<td>AIF</td>
</tr>
<tr>
<td>Anant Kumar Prasad</td>
<td>M&amp;E Officer, MANSI</td>
<td>TSRDS</td>
</tr>
<tr>
<td>Aseem Topo</td>
<td>Field Coordinator, MANSI</td>
<td>TSRDS</td>
</tr>
<tr>
<td>Harihar Mardina</td>
<td>Zonal Coordinator &amp; Trainer, MANSI</td>
<td>TSRDS</td>
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<tr>
<td>Pushpa Murmu</td>
<td>Zonal Coordinator &amp; Trainer, MANSI</td>
<td>TSRDS</td>
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<tr>
<td>Nandan Kumar Sahoo</td>
<td>Zonal Coordinator &amp; Trainer, MANSI</td>
<td>TSRDS</td>
</tr>
<tr>
<td>Rakesh Oraon</td>
<td>Zonal Coordinator, MANSI</td>
<td>TSRDS</td>
</tr>
<tr>
<td>Eight field staff</td>
<td>MNHMs, MANSI</td>
<td>TSRDS</td>
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MANSI Evaluation Report

During the last two decades, India has witnessed a significant reduction in the quantum of child deaths. However, neonatal deaths remain the biggest contributor to child deaths and the reduction of neonatal mortality indicators has been at a slower pace.

This report documents the evaluation of the Maternal and Newborn Survival Initiative (MANSI) project over a period of five years, deploying the home-based neonatal and child care (HBNCC) approach in one of the most disadvantaged communities in Jharkhand’s Seraikela block.

The report will be of immense value to state governments, public health professionals, policy makers, and organizations aiming at substantive reduction in neonatal and maternal mortality to meet the SDG targets.