IMPROVING THE HEALTH STATUS OF MOTHERS AND CHILDREN THROUGH HEALTH SYSTEM STRENGTHENING IN DISASTER PRONE NAMKHANA BLOCK OF SOUTH 24 PARGANAS DISTRICT, WEST BENGAL

ENDLINE EVALUATION

FINAL REPORT

Submitted to

Terre des hommes
Helping children worldwide.

Submitted by

MEDIAN
Research & Consulting Pvt Ltd

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Contents

LIST OF ACRONYMS

Acronym	Full Form
ANC	Antenatal Care
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
BCC	Behaviour Change Communication
BMOH	Block Medical Officer of Health
CHO	Community Health Officer
FGD	Focus Group Discussion
HBNC	Home-Based Newborn Care
HBYC	Home-Based Young Child Care
HRP	High-Risk Pregnancy
ICDS	Integrated Child Development Services
IFA	Iron Folic Acid
IEC	Information, Education and Communication
IMNCI	Integrated Management of Neonatal and Childhood Illness
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
MCP Card	Mother and Child Protection Card
MNCH	Maternal, Newborn and Child Health
MoHFW	Ministry of Health and Family Welfare
MSC	Most Significant Change
NSSK	Navjaat Shishu Suraksha Karyakram
PNC	Postnatal Care
PoCT	Point of Care Testing
PPP	Public Private Partnership
PRI	Panchayati Raj Institution
SBA	Skilled Birth Attendant
SC	Sub Centre
SHG	Self Help Group
SSDC	Sundarban Social Development Centre
Td	Tetanus and Diphtheria
Tdh	Terre des hommes
USG	Ultrasonography
WASH	Water, Sanitation and Hygiene

Executive Summary

The Sundarbans—a vast and ecologically critical mangrove delta straddling India and Bangladesh—is facing escalating threats due to climate change, including rising sea levels, intensified cyclones, tidal inundation, saline water intrusion, and coastal erosion. These environmental changes are not only disrupting ecosystems and livelihoods but also severely impacting maternal and child health. Women face heightened risks of complications such as anemia, miscarriage, and pregnancy-induced hypertension due to heat stress, poor water quality, and reduced access to health services post-disaster. Children, particularly girls from poorer households, suffer from chronic malnutrition, infectious diseases, and psychological trauma caused by repeated climate shocks and inadequate healthcare infrastructure.

In response, Terre des hommes (Tdh), in collaboration with the Sundarban Social Development Centre (SSDC), launched a three-year perinatal health intervention (2022–2025) in Namkhana block, West Bengal. The project focuses on two strategic pillars: strengthening healthcare systems and engaging communities. Key initiatives include capacity-building for frontline workers, improving facility readiness with diagnostic tools and WASH integration, enhanced management of high-risk pregnancies, and use of community platforms like SHGs and digital tools (e.g., *Matri Sakhi*) for awareness and advocacy. The initiative aims to build a resilient, gender-sensitive, and community-rooted healthcare model for the region.

Chapter 2 describes the methodological framework adopted for the endline evaluation. The evaluation was designed as a prospective quasi-experimental approach with both quantitative and qualitative components. The methodology was guided by the OECD DAC evaluation framework, focusing on relevance, effectiveness, efficiency, impact, and sustainability, and included a strong gender mainstreaming lens. This chapter sets the foundation for the findings discussed in subsequent chapters by ensuring a rigorous and context-sensitive methodology that accounts for both descriptive evidence and lived experiences within the project geography.

Chapter 3 outlines the demographic and reproductive profile of women respondents (pregnant and lactating) and healthcare providers from both intervention (Namkhana) and control (Patharpratima) blocks, forming the context for evaluating maternal and child health outcomes.

Key findings include:

- Respondent demographics: A total of 428 women in the intervention block and 433 in the control block were surveyed. The average age of respondents was 24.5 years in both blocks, with the majority (over 85%) between 18–30 years, indicating a young reproductive-age population.
- Educational background: A significant proportion of women were non-literate—59% in Namkhana and 49% in Patharpratima.
- Caste and religion: The population was predominantly Hindu (around 70%), with Muslims comprising ~30%. Namkhana had a higher share of Scheduled Castes (34%), while Patharpratima had more respondents from the General category (64.7%).

- Reproductive patterns: The average age at marriage was 19 years in Namkhana and 18.5 years in Patharpratima. The average age at first pregnancy was 20 years across both blocks. Most women had only one child, indicating early stages in their reproductive journey.
- Health workforce profile: A total of 26 health workers were surveyed (14 from Namkhana, 12 from Patharpratima). Namkhana had a relatively younger and more evenly distributed workforce in terms of experience. 100% of Namkhana's health workers had received training on managing high-risk pregnancies, compared to 66.7% in Patharpratima. Caseloads were also higher in Namkhana, with 50% of workers attending 10–30 pregnant women per month, versus fewer than 10 in Patharpratima.

Overall, the data reveal comparable demographic characteristics between the two blocks, with nuanced differences in literacy, caste distribution, occupational vulnerability, and health service readiness.

Chapter 4 presents a detailed analysis of the project's health system strengthening efforts in the Sundarbans, particularly in the Namkhana block. The intervention focused on capacity-building, infrastructure enhancement, improved service delivery, and systemic coordination to address longstanding gaps in maternal and child healthcare within a geographically and climatically vulnerable region.

Key highlights include:

- Capacity Building: Over 80% of health workers in the intervention block recalled receiving structured training on maternal and child health (MCH) topics, with 100% trained in high-risk pregnancy management and nutritional counselling. Post-training, 93% of health workers expressed satisfaction, and 86% felt "very confident" applying the knowledge in their day-to-day work.
- Improved Practices: Health workers in Namkhana demonstrated enhanced ability to identify high-risk pregnancies (HRPs) and increased confidence in providing immediate or home-based care. Consistent provision of 180 IFA tablets (71.4% vs. 33.3% in control) also signified better adherence to national guidelines.
- Enhanced Service Uptake: Uptake of essential ANC services such as IFA supplementation (99.3%), Td boosters (90%), and iodized salt counselling (83.6%) were significantly higher in Namkhana than the control block.
- Infrastructure and WASH Improvements: All 14 assessed sub-centres were equipped with functional PoCT devices. WASH facilities were upgraded in select centres, with 100% reporting access to safe drinking water and functional sanitation, though challenges like seasonal flooding persist.
- Community-Level Impact:
    - Institutional delivery rate in Namkhana reached 100%, with increased use of referral transport (88.5% at endline vs. 66% at baseline).

    - 76% of women in Namkhana could identify at least one HRP condition—43 percentage points higher than in the control block.

- Postnatal Care and Newborn Support: PNC coverage within 48 hours remained high (92%), and the promotion of Kangaroo Mother Care rose from 67% to 84%. ASHAs showed improved skill-based counselling, with 71% demonstrating breastfeeding techniques to mothers.
- System Coordination: Regular coordination meetings among ASHAs, ANMs, and PRI members have fostered integrated care and efficient referrals. However, high workloads and infrastructure gaps still challenge service delivery continuity.
- Most Significant Change (MSC): Health workers reported high achievement (scores of 8–10) across indicators like trust-building, ANC awareness, HRP identification, and transition to institutional deliveries. These outcomes reflect both programmatic success and areas for further strengthening.

Chapter 5 delves into the community engagement strategies implemented to improve maternal and child health in the Sundarbans, with a primary focus on capacitating Self-Help Groups (SHGs) and engaging families. By integrating health discussions into SHG meetings and shifting to decentralized, village-based training sessions, the project significantly enhanced accessibility and local participation.

Key data points and findings include:

- Health awareness through SHGs: Women reported improved knowledge on critical health topics such as kangaroo care, nutrition, iron and calcium intake, and institutional deliveries. SHG members guided neighbors, corrected harmful practices, and advocated hospital births—highlighting a clear shift in perinatal behaviour.
- Impact on community behaviour: In areas like Namkhana and Haripur, SHG members directly intervened in cases involving low birth weight, premature births, and risky pregnancies—facilitating referrals and saving lives.
- Improved decision-making dynamics: In Namkhana (intervention block), 50% of mothers reported joint decision-making with their spouses on child-related matters, compared to 37% in the comparison block (Patharpratima). However, only 7.5% in Namkhana and 7.9% in Patharpratima reported making independent decisions on maternal and child health—highlighting ongoing limitations in women's autonomy.
- Reduction in household workload: Pregnant women in Namkhana reduced household work hours from 4.28 to 2.87 hours, and in Patharpratima from 3.65 to 2.50 hours, indicating improved family support during pregnancy.
- Revival of dormant women's groups: In Fraserganj, formerly inactive women's groups were revitalized to become peer-led platforms for health awareness, mutual support, and timely action during pregnancy.

The chapter concludes that while community engagement has led to measurable improvements in health behaviors and support systems, targeted efforts are still required to address entrenched gender norms, strengthen women's decision-making power, and ensure equitable access to healthcare.

Chapter 6 presents recommendations and way forward based on the findings. The recommendations are designed to strengthen the project's key intervention areas and address identified gaps and focus on enhancing the sustainability, effectiveness, and scalability of project outcomes, while also suggesting opportunities for further improvement and adaptive management.

Chapter 1: Introduction

Background: Sundarbans and the rising effects of climate change

The Sundarbans, spanning approximately 9,630 square kilometres across the southern edge of West Bengal in India and parts of Bangladesh, is the largest mangrove forest in the world. It forms the world's most extensive delta, shaped by the confluence of the Ganges, Brahmaputra, and Meghna rivers. Significant portions of the region are recognized as Ramsar Sites, denoting their international ecological importance. The Indian section of the Sundarbans, comprising of 102 islands of which 48 are inhabited, was designated a UNESCO World Heritage Site in 1987.

While the mangrove ecosystem continues to be critical for the lives and livelihoods of its inhabitants, studies by UN and other international bodies indicate detrimental impact of climate change in the region[1]. Rising sea levels are exerting severe pressure on the delicate ecosystem of the Sundarbans, a region with an average elevation of less than one metre above sea level. As a result of thermal expansion and the accelerated melting of glaciers and polar ice caps, the frequency and intensity of tidal inundation have increased. Although mangroves are somewhat tolerant of submersion, prolonged or repeated flooding can lead to their decline. Coastal erosion has intensified, and some islands have already disappeared, signalling the vulnerability of others in the delta. These changes have forced communities to relocate, creating a growing population of environmental migrants and adding pressure to nearby urban and rural settlements.

Simultaneously, the intrusion of saline water is causing widespread ecological and socio-economic disruption. Elevated soil salinity is diminishing agricultural productivity by impairing plant growth and degrading soil health. Freshwater aquatic species, including fish and prawns, are being displaced as saline waters push further upstream into estuaries and rivers, drastically reducing habitable zones. Moreover, the availability of freshwater for drinking and irrigation is under threat. These challenges are compounded by increasingly erratic monsoon patterns and more frequent cyclones, both of which have disrupted traditional fishing and farming practices—leading to heightened livelihood insecurity and environmental degradation across the Sundarbans region.

Impact of climate change on maternal and child health

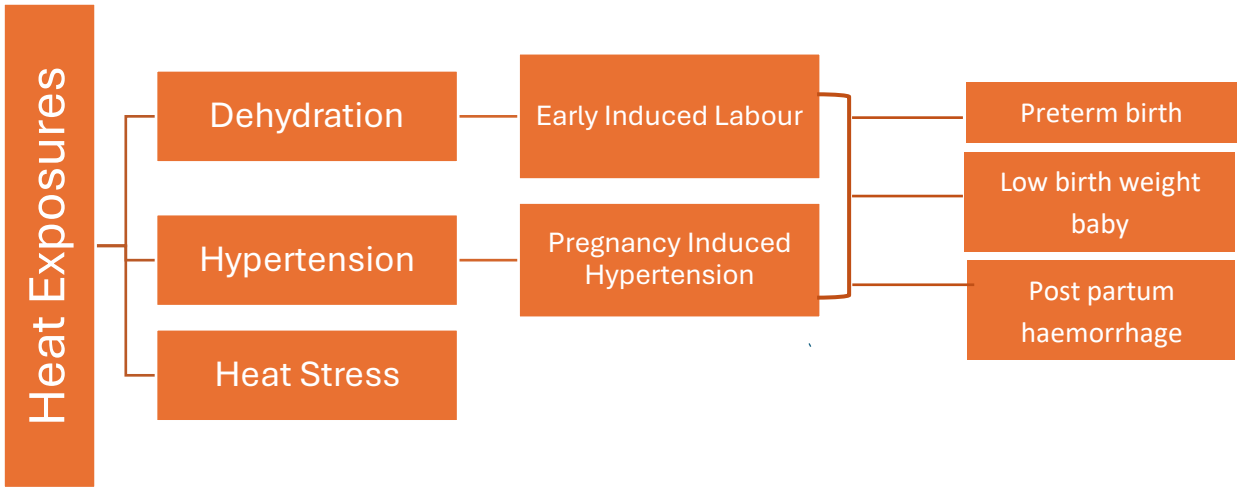
Climate change is increasingly affecting the reproductive health of women in the Sundarbans, contributing to a range of complications and restricting access to essential healthcare services. Environmental stressors—such as salinity intrusion, heat stress, and extreme weather events—exacerbate health risks including miscarriage, anemia, preeclampsia, and infant mortality (Biswas, 2013; Dasgupta et al., 2020). Many women consume saline-contaminated water, which leads to dehydration and hypertension, both associated with prenatal complications and increased infant mortality (Dasgupta et al., 2020). In addition, women engaged in prawn seed collection often stand for up to six hours a day in saline water, resulting in chronic skin infections, pelvic inflammatory disease, and urinary tract infections (Chakraborty, 2020)[2]. Access to maternal healthcare is severely compromised, especially

[1] https://www.cms.int/sites/default/files/publication/fact_sheet_sundarbans_climate_change.pdf

[2] https://frontline.thehindu.com/news/on-islands-swallowed-by-water-there-is-nowhere-else-to-go-sundarbans-mangrove-forests-river-erosion-climate-induced-displacement-distress-migration/article67792317.ece

following climate disasters like cyclones, which damage healthcare infrastructure and disrupt transport. For example, during Cyclone Amphan in 2020, over 563 primary health centers in West Bengal were damaged, significantly reducing access to antenatal and postnatal care (Kanjilal et al., 2013).

Increasing temperatures are also linked to heat stress-induced complications such as preterm labor, pregnancy-induced hypertension (PIH), and postpartum hemorrhage (PPH)—a leading cause of maternal mortality[3] in the Sundarbans. Pregnancy Induced hypertension is also responsible for Preterm birth and Low birth weight babies. Moreover, the psychological burden of repeated climate shocks, displacement, and economic instability has led to rising mental health issues such as anxiety, depression, and deliberate self-harm. Climate change thus acts as a risk multiplier, urgently calling for resilient, gender-sensitive health system responses[4].



Among children, the early exposure to climate change increases their vulnerability and threatens their physical and cognitive development. Frequent disasters—cyclones, floods, and tidal surges—undermine food security and sanitation, resulting in high rates of malnutrition and disease. Over one-third of children in the region are chronically malnourished, with girls aged 13–36 months from poorer households most affected (FSH-IIHMR, 2010). Malnutrition weakens immunity, increasing susceptibility to respiratory infections, diarrhoea, and skin diseases (Kanjilal et al., 2010; Panda et al., 2016). Water salinization following cyclones like Aila and Amphan has worsened gastrointestinal and dermatological issues in children (Liebarman, 2020). Beyond physical health, repeated exposure to disasters has psychological impacts—children often experience anxiety, emotional distress, and developmental delays (Chowdhury & Jadhav, 2012). Coping strategies such as reduced food intake or school absenteeism further compromise their well-being. Despite growing healthcare needs, timely access remains inadequate, particularly after disasters when services are disrupted or overwhelmed.

The Response

In response to these growing challenges, Terre des hommes (Tdh), in partnership with Sundarban Social Development Centre (SSDC), initiated a three-year perinatal health intervention (2022-2025) in

[3] The annual number of female deaths from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy

[4] https://saciwaters.org/uploads/documents/1694778420_saciwaters2022-tdhfinalreport30thjune2022(1)(1).pdf

Namkhana, a block located within the district of South 24 Parganas, West Bengal—structured around two strategic pillars: strengthening health services and community engagement to reduce maternal and neonatal mortality in the region.

Key pillars of the project:

Strengthening healthcare delivery system	Community Engagement
• Enhancing capacities of frontline health care workers through training and handholding support • Strengthening health facilities through the provision of Point of Care Testing (PoCT) devices) aligned with government-endorsed models for sustainability. • Effective screening and management of high-risk conditions in pregnant women • Regular counselling and follow ups with high-risk pregnant women and home-based management of LBW infants • Supporting ultrasound (USG) support for pregnant women facing financial hardship • Regular coordination and advocacy with health authorities at block and district level • Integration of WASH services at health centres to improve infection, prevention and control (IPC). • Coordination with Panchayati Raj Institutions, ANMs and ASHAs through facilitating convergence meetings	• Training of self-help group women on perinatal health components to act as community advocates • Leveraging a digital learning platform called 'Matri Sakhi' and other interactive IEC tools to spread awareness Celebration of important days in the community such as world hygiene day, world breastfeeding day, Nutrition week, etc • Supporting women groups with a one-time revolving fund to cater to the medical emergencies and needs of pregnant women and mothers in the community

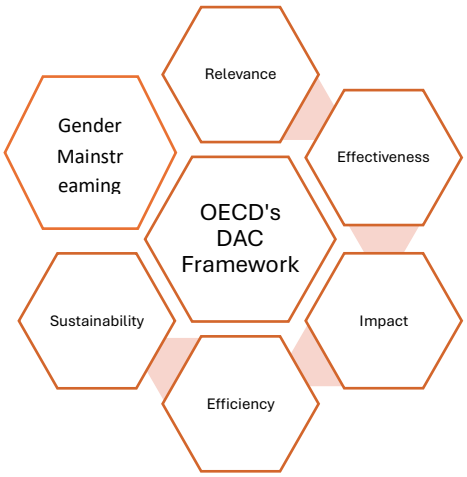
Chapter 2: Methodology

Objectives of the Endline Evaluation

After 3 years of implementation, an external endline evaluation was commissioned to Median Research and Consulting Pvt Ltd. with the following key objectives:

- Assess the level of knowledge and practices related to perinatal components in the households and community within the program geography.
- Assess the capacity of health care workers to deliver quality and timely MNCH services.
- Assess the distribution of project outcomes (intended and unintended) and impact across different social groups in the target geography from an intersectional lens.
- Provide key recommendations and suggest good practices for adaptive management and to prepare for scale.

Study design and methodology



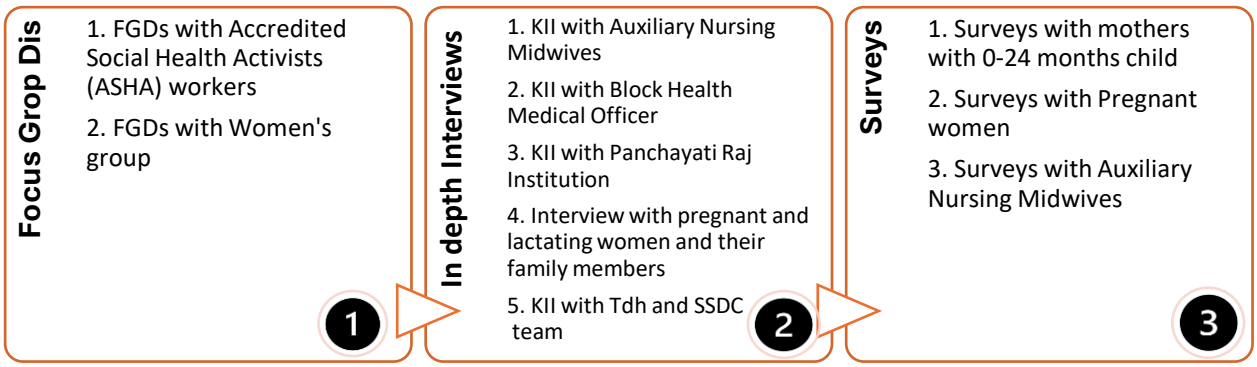
Approach: The evaluation adopted the OECD DAC framework to assess the programmatic impact. The 5 key evaluation parameters included- Relevance, Effectiveness, Efficiency, Impact and Sustainability. Additionally, the evaluation also integrated Gender mainstreaming to assess the program and identify key learning areas.

Design: The endline evaluation adopted a prospective quasi-experimental design consisting of a comparison and an intervention arm to assess the impact of the intervention on perinatal health outcomes in the study population. To complement mixed-methods approach, an episodic Most Significant Change (MSC) technique was adopted with health workers to share stories reflecting the most significant changes they had experienced in their practice because of the intervention.

Geographical Coverage: For the intervention in Namkhana block (hereby referred as "intervention block"), Patharpratima (hereby referred as 'comparison block") was selected as the comparison group. Data was collected from 4 Gram Panchayats in intervention block (Fraserganj, Haripur, Mousuni, Budhakali) and control block (Dakshin Gangadharpur, Durbachati, Sridharnagar, and Gopalnagar) respectively. The rationale for selecting Patharpratima as comparison for the study are as follows,

1. Adjacent to Namkhana block and baseline data was collected
2. Similar geospatial characteristics as Namkhana
3. Similar health infrastructure as Namkhana
4. Similar socio-economic scenario as Namkhana

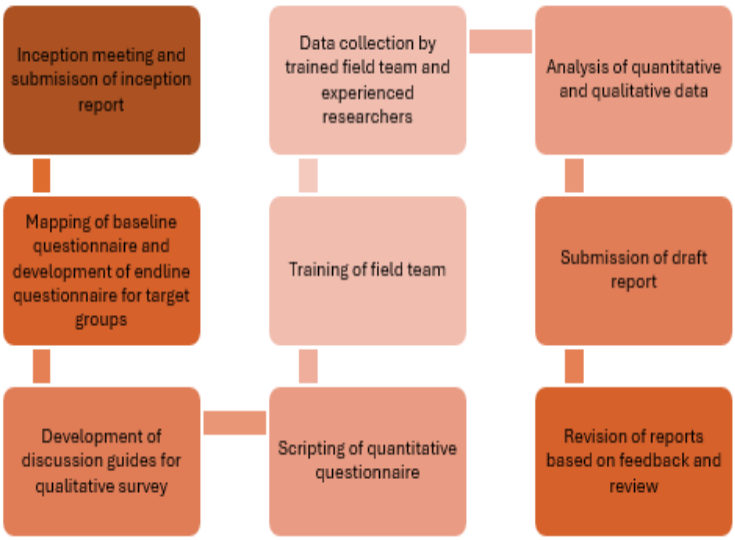
Methodology: Building on the design, the endline evaluation adopted mixed methodology to approach its research objectives with the concurrent implementation of quantitative and qualitative data collection. Following **methods of data collection** were adopted:



Sampling Method and Sample Size: The sample selection was guided by purposive sampling based on criteria such as prevalence of high risk pregnancy reported in the respective subcentre, geographical marginality, patient burden on health facility, etc. The sample size aimed to match the baseline sample of 401 expecting and new mothers and 21 health care workers in each arm.

Stakeholders	Method	Intervention	Comparison	Total sample
Pregnant and mothers with children below 2 years	Survey	428	433	861
Healthcare workers (Auxiliary Nursing Midwives and Community Health Officers)	Survey	14	12	26
Community Women	Focus Group Discussion	4	0	4
ASHA workers	Focus Group Discussion	3	0	3
Key Informants (pregnant women, family members, PRI, BMOH, project team)	In-depth Interviews	16	0	16

Study roll-out: The key steps observed during the data collection process are explained in the adjoining figure.



Data Analysis: Quantitative data was analysed on excel and software (SPSS or STATA) was used for advance calculations. In some spaces, difference between treatment and comparison groups were analyzed using statistical tests (e.g., t-tests). In addition to this, comparative analysis has been used to compare health outcomes in treatment and control groups to evaluate the impact as well as longitudinally between baseline and endline.

For the qualitative data, thematic analysis was employed to identify key themes related to health outcomes. Quantitative findings has been triangulated with the qualitative data wherever needed.

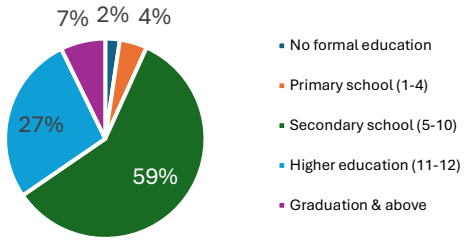
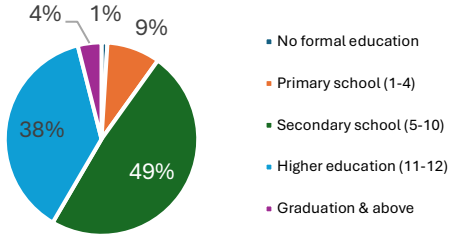
The report is organized into seven chapters, beginning with an introduction that outlines the regional context, project rationale, and evaluation approach. Chapter 3 presents the demographic profile of beneficiaries and health workers. Chapter 4 focuses on health system strengthening, including capacity building and service delivery improvements. Chapter 5 highlights community engagement through SHGs . Chapter 6 addresses climate resilience and healthcare access during disasters. Finally, Chapter 7 provides recommendations to enhance maternal and newborn health outcomes and sustain project impact.

Limitations of the study:

- Data collected from mothers of children aged 0 to 2 years—such as the number of postnatal visits by ASHA workers, duration of exclusive breastfeeding, and timing of breastfeeding initiation—were based entirely on recall. Given the time lapse, these responses are susceptible to recall bias and may not fully reflect the actual service utilization patterns.
- Although the study intended to undertake multistage random sampling, given the field realities, the enumerators had to adopt non-random sampling strategy, primarily purposive sampling in the intervention block and snowball sampling in the control block.
- Many responses in the survey and FGDs relied on self-reporting by participants, which may introduce social desirability or recall bias.

Chapter 3: Demographic profile of respondents

This chapter presents the demographic profile of women (including pregnant women and lactating mothers) surveyed from both blocks. For the evaluation, data was collected from 428 women in intervention block and 433 women in the control block.

	Intervention block (N-428)	Control block (N-433)
Respondent's age	**Avg: 24.5 yrs**	**Avg: 24.5 yrs**
12-17 years	2%	0%
18-24 years	56%	54%
25-30 years	32%	33%
Above 30 yrs	10%	13%
Educational Status of respondents		
Religion		
Hindu	69.2%	70.4%
Muslim	30.8%	29.6%
Caste		
General	50%	64.7%
SC	34%	24%
ST	1%	6%
OBC	3%	6%
Preferred not to say/ Don't Know	11%	0.3%
Primary occupation	Agriculture & non-agriculture labourer: 40.9%	Agriculture & non-agriculture labourer: 54.3%
Avg HH size	5.52 members	5.77
Type of HH structure		
Pucca	46%	39%
Semi-Pucca	33%	34%
Kaccha	21%	27%
Toilet Availability (Yes)	89.2%	87.5%

The socio demographic data from both the intervention (Namkhana) and control (Patharpratima) blocks reveal largely comparable profiles, with minor variations. The average age of respondents in both areas was 24.5 years, with the majority falling within the 18–30 age range, highlighting a young reproductive population. Educational data reveals that the majority 59% and 49% women are non-literate and have never received any formal education. However, there is also 27% and 38% women across intervention and comparison blocks respectively, where they have completed their higher education. In terms of

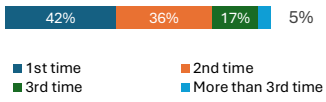
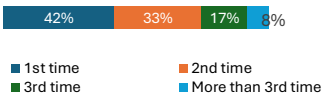
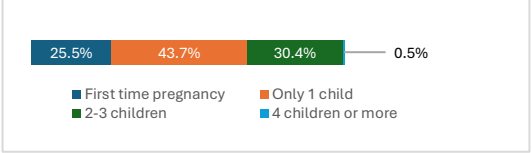
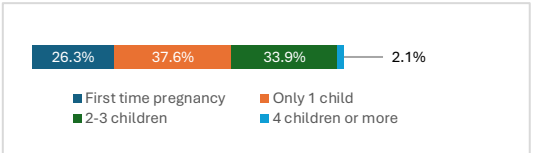
religion, the population is predominantly Hindu in both blocks (69.2% in Namkhana and 70.4% in Patharpratima), with Muslims comprising roughly 30%. Caste distribution shows a higher proportion of respondents from the General category in the comparison block (64.7%) compared to the intervention block (50%). The Scheduled Caste population was more prominent in the intervention block (34%), while Scheduled Tribes and OBCs formed a small portion in both areas. A notable 11% in the intervention block chose not to disclose/ or were unaware of their caste.

Occupationally, a higher percentage of households in the comparison block (54.3%) rely on agricultural and non-agricultural labour, compared to 40.9% in the intervention area, indicating slightly greater economic vulnerability. The average household size was marginally larger in the comparison block (5.77) than in the intervention block (5.52). Housing conditions varied, with pucca houses being more common in intervention (46%) than in comparison block (39%), though semi-pucca and kaccha structures were evenly distributed. Access to sanitation was relatively high in both areas, with 89.2% of households in the intervention block and 87.5% in the control block reporting the availability of toilets. These indicators collectively suggest a shared rural socio-economic context with subtle differences that may influence program outcomes and service accessibility.

Reproductive profile: The reproductive profile of women in both the **intervention** and **control blocks** shows similar patterns, reflecting early marriage and childbearing trends typical of rural settings.

- The **average age at marriage** was slightly higher in the intervention block (**19 years**) compared to the control block (**18.5 years**), though both are below the legal age of marriage.
- The **average age at first pregnancy** was consistent across both blocks at **20 years**.
- On average, in the selected sample, women in both groups reported having **one child**, indicating a relatively early stage in their reproductive cycle for most respondents.

This profile suggests a need for continued focus on **delaying age of marriage**, promoting **spacing between pregnancies**, and ensuring **early and sustained antenatal care** for young mothers.

	Intervention block (N-428)	Control block (N-433)
Average Age of Marriage	19 years	18.5 Years
Average age of first pregnancy	20 years	20 years
Number of gravidas		
Number of children		

Health care providers (ANMs & CHOs)- A total of 26 frontline health workers, 18 ANMs and 8 CHOs, were covered across intervention (14) and comparison (12) blocks from 8 health care facilities. The health workforce profile from the intervention (Namkhana) and comparison (Patharpratima) blocks reflects key differences in training coverage, service experience, and workload. The intervention block included 14 health workers—10 Auxiliary Nurse Midwives (ANMs) and 4 Community Health Officers (CHOs)—while the comparison block comprised 12 workers, including 8 ANMs and 4 CHOs. The average age of workers was slightly younger in the intervention block (38 years) compared to the comparison block (41 years).

		Intervention (14)	Comparison (12)
Type of health worker			
Auxiliary Nursing Midwives (ANM)		10	8
Community Health Officer (CHO)		4	4
	**Average Age**	38 Yrs	41 Yrs
	**Years of experience**	Less than 5 year 28.6% 5-10 years 28.6% 10 + years 42.8%	Less than 5 year 25% 5-10 years 0 10 + years 75%
	**Received training on high-risk pregnancy**	100 %	66.7%
	**No. of pregnant women served in a month**	50%: 10 to 30 pregnant women	50% reported: Less than 10 pregnant women per month

In terms of experience, the intervention block had a more balanced distribution, with 28.6% workers having less than five years, another 28.6% with 5–10 years, and rest 42.8% with over ten years of service. In contrast, the comparison block was largely composed of more experienced personnel—75% had over ten years of experience, and rest 25% has less than 5 years of experience, indicating a senior workforce profile.

Additionally, reported caseloads varied significantly: Half of the health workers in the intervention block served between 10 to 30 pregnant women per month, while those in the control block generally reported serving fewer than 10. These findings suggest a more intensive engagement with maternal health services in the intervention area, likely influenced by both training and programmatic support.

Conclusion

The demographic profile of respondents and frontline health workers across Namkhana and Patharpratima highlights a broadly similar rural and socio-economic context, yet reflects distinct

variations in education levels, caste composition, household conditions, and access to health services. These subtleties are crucial in interpreting health behaviours and outcomes.

The intervention block (Namkhana) stands out for its younger, well-trained health workforce and higher engagement in maternal health services, suggesting stronger programmatic support and preparedness. Conversely, the control block (Patharpratima), despite having a more experienced cadre of health workers, shows lower training coverage and lower number of patient servicing.

Early marriage limited formal education, and labour-based livelihoods remain persistent features across both blocks, indicating a continued need for targeted interventions around reproductive health education, delaying age at marriage, and increasing women's access to healthcare services.

Chapter 4: Health system strengthening

The health system in the Sundarbans suffers from significant gaps in both infrastructure and human resources, particularly in the availability and deployment of trained health workers. Government health facilities in the region are often understaffed, with a shortage of doctors, nurses, ANMs (Auxiliary Nurse Midwives), and ASHAs (Accredited Social Health Activists), which limits the reach and quality of services, especially in remote and island villages.

According to the FSH-IIHMR study (2010), while there is high demand for institutional care and outpatient services, most children receive treatment from informal rural medical practitioners who are untrained and unlicensed. This reliance on unqualified providers stems from both the scarcity of trained health professionals and the inaccessibility of formal health centers, particularly after climatic events like cyclones, which damage infrastructure and disrupt transport. The situation worsens during emergencies, when timely access to maternal and child healthcare becomes critical. Bose et al. (2018) and Kanjilal et al. (2013) have noted that healthcare facilities often become non-functional after extreme weather events, and that the limited number of health workers is unable to meet the increased needs of the population. Moreover, the difficult geography of the Sundarbans—with scattered islands and poor transportation—further restricts the mobility of health staff, contributing to absenteeism and irregular service delivery. These systemic gaps highlight the urgent need for strengthening the health workforce, improving infrastructure resilience, and ensuring continuous service delivery in climate-vulnerable areas like the Sundarbans.

This section outlines the comprehensive approach adopted to reinforce the health ecosystem across multiple levels of care. It begins with the **capacity building of frontline healthcare workers**, equipping ASHAs, ANMs, and CHOs with updated knowledge and practical skills on maternal and child health, and integration of WASH components for improving infection prevention and control (IPC) measures.

4.1 Capacity building of frontline healthcare workers

Under the intervention of the perinatal health project, ANMs and CHOs from all 37 Sub-Health Centres underwent capacity building exercise. During the endline assessment, the 14 sampled ANMs and CHOs from intervention block were asked about the trainings received on key maternal and child health (MCH) topics. Over 80% could clearly recall attending these sessions. Notably, 100% respondents confirmed receiving training on high-risk pregnancy identification and management, nutritional guidance for anaemia, postnatal care (PNC), and pregnancy nutrition.

4.1.1 Knowledge and practice of health workers

Capacity building plays a crucial role in strengthening the health system by equipping frontline workers with the knowledge, skills, and confidence needed to deliver quality care. When health workers receive regular, well-structured training, it enhances their understanding of key maternal and child health issues, improves their ability to identify complications early, and ensures adherence to standard protocols. Over time, effective capacity building translates into improved service delivery practices, and increased trust in public health services especially in underserved and climate-vulnerable areas like the Sundarbans.

4.1.1.A Knowledge regarding Antenatal Care

During the endline assessment, the health workers' knowledge was assessed on certain parameters like

- Minimum ANC is required for pregnant women
- Stages of registering pregnancy at health facility
- Stage of pregnancy when a woman should start consuming Iron and Calcium tablets

The data presents a mixed picture of knowledge levels on key maternal health indicators across the intervention (Namkhana) and control (Patharpratima) blocks. The proportion of health workers possessing the correct knowledge has been categorized into 3 segments and the color has been used accordingly.

Scoring secured	Indicative Knowledge	
0 to 35%		Need improvement and focus
36% to 70%		Moderate knowledge
More than 70%		Good knowledge

Knowledge	Intervention (Namkhana-14)	Control (Patharpratima- 12)
Correct knowledge of minimum ANC	85.7%	75.0%
Correct knowledge on when to register a pregnancy at health facility	42.9%	91.7%
Knowledge on correct month of pregnancy to start the Calcium tablets	92.3%	92.9%
Correct knowledge on duration (in months) when pregnant women should consume iron tablets	85.7%	91.7%

- **Knowledge of minimum antenatal care (ANC) visits** is significantly higher in the intervention group (85.7%) compared to the control group (75.0%) which suggested a positive impact of the capacity-building efforts on understanding the importance of regular ANC.

- Conversely, **knowledge of when to register a pregnancy** is much lower in the intervention group (42.9%) than in the control group (91.7%). This unexpected result indicated a potential gap arising need to focus in the communication around early poignancy registration in the intervention block.

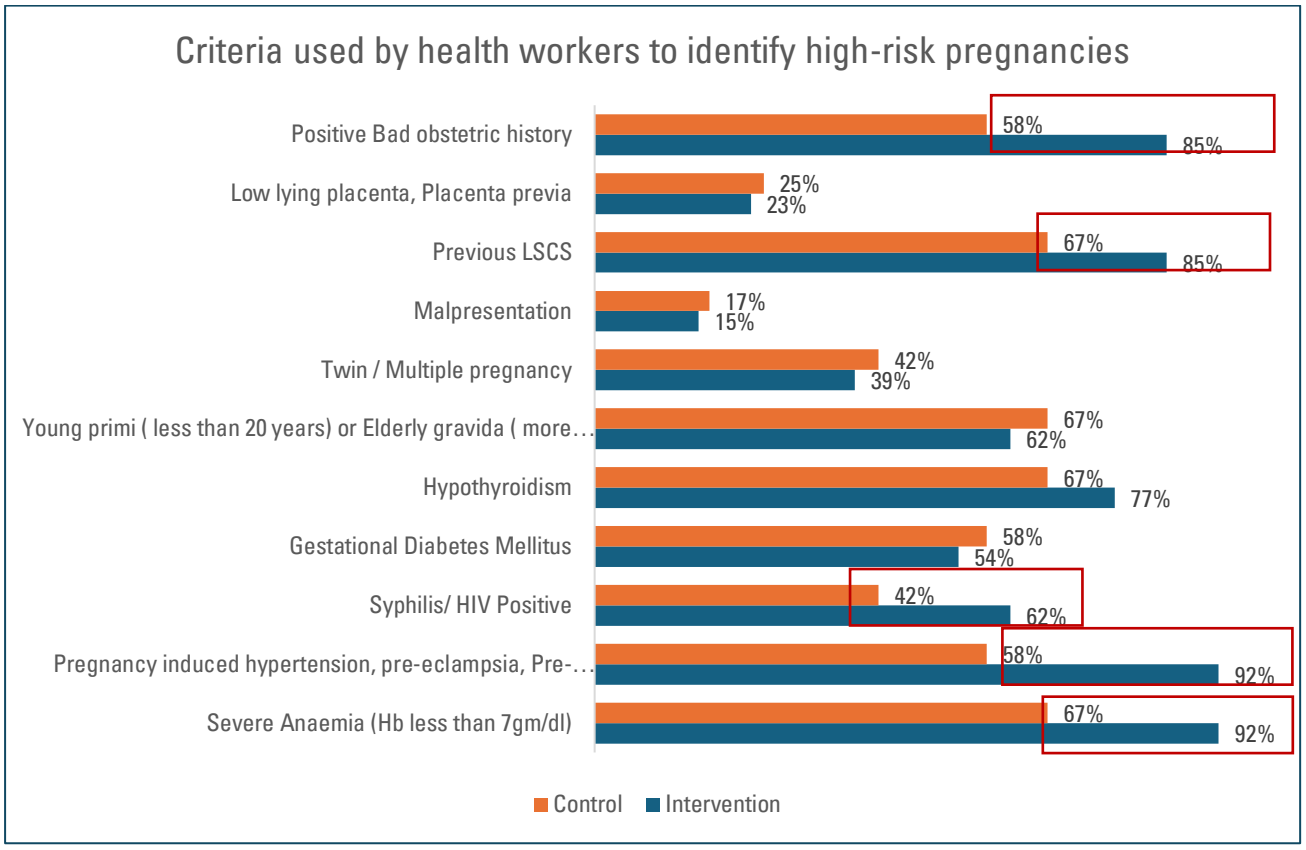
- The knowledge dissemination on right time to **start calcium supplementation** was seen at same level in both intervention and control blocks. Similarly, **correct duration for Iron tablet consumption during pregnancy** indicated a need for reinforcement of IFA (Iron-Folic Acid) guidelines in the intervention area.

4.1.2.A Practice: Management of High-Risk Pregnancy Conditions

To understand the application of training and increased level of knowledge in their day-to-day operation, the health workers were asked about the criteria they use to identify cases with high-risk pregnancies. Following are the **top 5 criteria** that were extensively used by health workers in Intervention block to identify high-risk pregnancies.

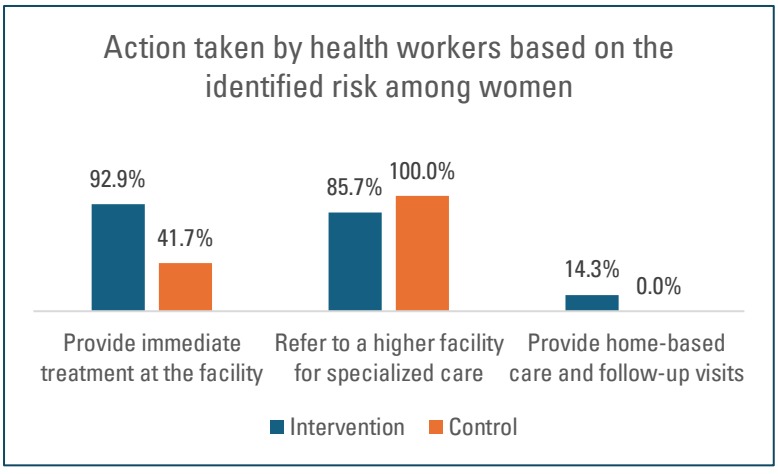
Severe Anaemia (Hb less than 7gm/dl)	Pregnancy induced hypertension, pre-eclampsia, Pre-eclampsic toxemia	Previous LSCS	Positive Bad obstetric history	Hypothyroidism

The BMOH, Namkhana stated that prevalence of hypothyroidism among women remains high (approx. 35%), exacerbated by consumption of low-cost, non-iodized salt. Tests revealed no adequate iodine content in household salt samples over the past two years.



Once high-risk pregnancy (HRP) cases were identified, health workers were asked about their subsequent course of action. In the intervention block, a significant proportion of health workers reported providing immediate treatment to the women at the facility, **more than twice the rate** observed in the control block.

This suggests an enhanced level of knowledge and confidence among the health care providers, stemming from consistent capacity-building efforts. In contrast, all health workers in the control



block reported referring women with HRP to higher facilities for specialized care, with **no instances** of home-based care being reported.
Notably, **14.3% of health workers in the intervention block** mentioned providing home-based management for HRP cases. This reflects the positive impact of the **specialized training delivered under the perinatal health project**, which emphasized home-based management of high-risk pregnancies as part of an integrated care approach.

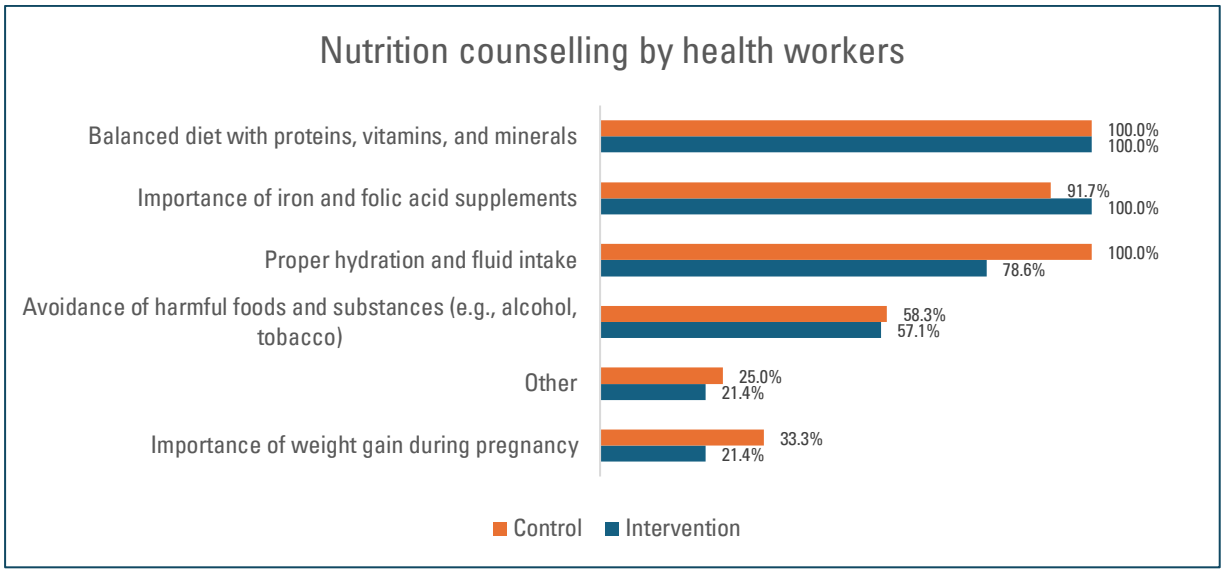
4.1.2.B Practice: Nutrition Counselling

Health workers were also asked about the key nutritional messages they were conveying to the pregnant women and mothers in both intervention and control blocks. **The top 3 key messages the health workers counselled the women in both intervention and control blocks were on**

Proper hydration and fluid intake

Importance of iron and folic acid supplements

Balanced diet with proteins, vitamins, and minerals



The IEC materials provided under the project acted as a catalyst for ASHA workers while transferring the knowledge on do's and don'ts in food intake or avoidance of certain foods and substances etc. They also confirmed that they feel more confident in identifying danger signs and high-risk cases.

"Because of the program, people are now more aware. The materials, such as the IEC books, have helped even us become more informed. Now both we and the community understand more about minimum nutritional requirements and high-risk symptoms". -ASHA, Bagdanga

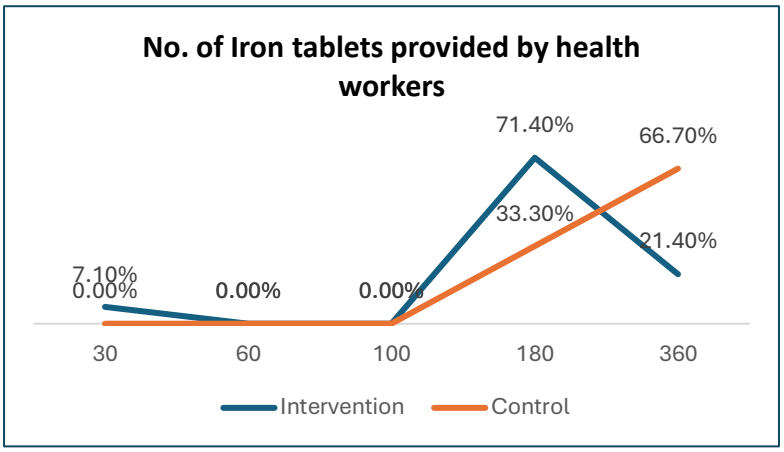
The effectiveness of the nutritional counselling practices of health workers also came through during the discussions with the mothers, who explained that these messages were communicated with clarity and supported them through the entire journey of their pregnancy.

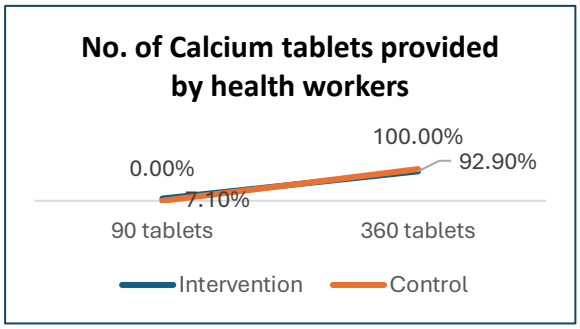
"The ASHA worker gave me a pregnancy test kit and told me to take care, like eating green vegetables, eggs, milk."- Haripur

"She advised me to sleep 8 hours at night and take 2 hours rest in the afternoon."-Mousumi

4.1.2.B Practice: Provisioning Supplements

Further to the nutritional counselling, they were asked about the number of Iron and Calcium tablets they provided to the women. The figure below clearly shows that 71.4% health workers in the intervention group provided exactly 180 iron tablets, compared to 33.3% in the control group. This indicates that health workers in the intervention area are more consistent and aligned with recommended IFA (Iron-Folic Acid) supplementation guidelines. The higher adherence in the intervention group likely reflects the positive impact of focused training and supervision, possibly under a targeted maternal health project or capacity-building initiative.





While talking about the distribution of Calcium tablets to the beneficiaries, the data reflects strong implementation of calcium tablet distribution in both intervention and control groups.

The health workers were also asked about the **challenges** they face in their daily work while serving the maternal and child health. The qualitative findings exhibited that ASHA workers are solely responsible for providing services to pregnant and lactating women and children in terms of creating awareness about health, nutrition, counselling on maternal and child health, family planning, identifying pregnant women, new-borns, accompanying the pregnant women for checkup and delivery, referrals etc. With this level of responsibilities, the key challenges mentioned by them are:

- "We advise them to drink 4 litres of water, but they don't do that."
- "Some even hide their medicines. They empty the strips without consuming them."

Non-compliance from beneficiaries 1

- "If the cloth on the weighing machine could be made bigger... babies slip out."

Lack of adequate equipment 2

- "Sometimes mothers are willing, but family pressure leads them to follow old practices."

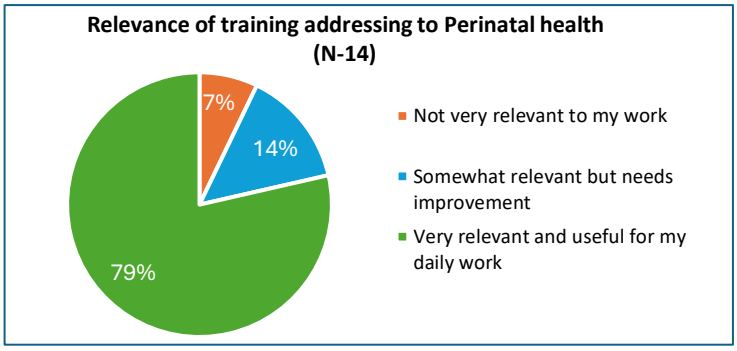
Family interference 3

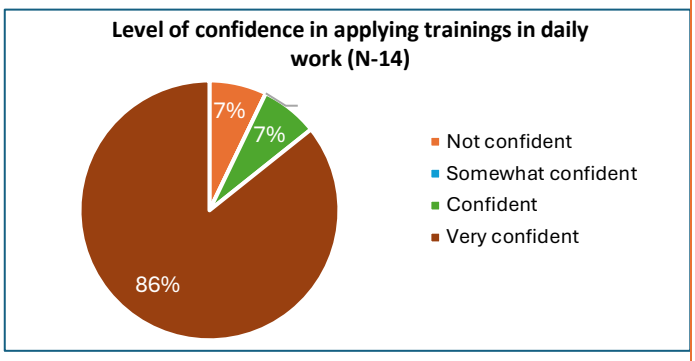
- "We tell them not to oil the baby or sunbathe them, but they still do."

Resistance to behavior change due to cultural norms 4

4.1.3 Training satisfaction and feedback from heath workers

The 14 ANMs and CHOs who have been interviewed from different gram panchayets of intervention block-Namkhana, 79% of them attested the training to be very relevant and useful to their daily work and a significant 86% of them expressed to feel "Very confident" and 7 % confident in applying their training in daily work. This showcased a positive training impact overall.

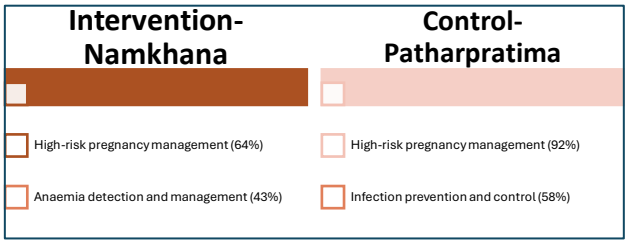




Overall, 93 % of the health workers expressed their satisfaction with the training provided under the perinatal health project. However, the health workers expressed the need for shorter and frequent trainings on new updated knowledge on MCH topics or effective communication for the targeted communities. ASHAs reported **physical fatigue during long trainings**, hence suggested shorter refreshers.

"Yes, we need revision. But we do not have the capability to sit for long now for these trainings. We feel drowsy, back pain."

During the survey, while health care workers in the comparison arm reported parity in receiving training on the selected subjects such as home based management of high risk pregnancy, etc by the government; their training needs (in Patharpratima) is significantly higher than the need for refresher trainings among health workers in the intervention block; suggesting that the project trainings were effective in delivering the training outcome. The top 2 training need demanded in each location are mentioned in the adjoining figure.



While interacting with the ANMs through one-to-one discussion, they stated that the ongoing involvement of SSDC field workers has added critical value in tracking and counselling high-risk pregnancies and promoting nutrition awareness. Their coordination with ASHAs has not only enhanced follow-up care but also strengthened the broader community's understanding of maternal and newborn health. This collaboration has helped reduce resistance to institutional deliveries and increased

awareness on teenage pregnancy, anaemia, and newborn care practices, such as kangaroo care and breastfeeding hygiene.

*The findings demonstrate that while initial training has been effective in building foundational knowledge and confidence—particularly in Namkhana—there remains a strong and growing demand for **refresher and topic-specific training**, especially in Patharpratima.*

*Moreover, the divergence in training needs between the two blocks such as the emphasis on infection control in Patharpratima versus anaemia management in Namkhana indicates that **training programs must be context-sensitive** and data-driven, aligning with local need and operational challenges. Addressing these gaps through regular, targeted refresher trainings can further strengthen frontline service delivery and improve maternal and child health outcomes across the region.*

4.2 Ante Natal Care

This section of the chapter explores how the capacity building of the health workers translated into improved antenatal care practices, including more timely registration, better counselling, and regular monitoring of maternal indicators for both pregnant women and lactating mothers. During baseline 404 lactating mothers were interviewed from Namkhana and Patharpratima each. Endline covered 428 women (mothers and pregnant women) from Namkhana and 433 from Patharpratima. The findings presented the comparison between baseline and endline data of women from intervention (Namkhana) and also the comparison of endline data between intervention (Namkhana) and Control (Patharpratima).

4.2.1 Registration of pregnancy

Registration of pregnancy is the first critical step in ensuring timely and effective antenatal care (ANC) for expectant mothers. Early registration, ideally within the first trimester, not only helps in identifying and monitoring high-risk pregnancies but also facilitates the scheduling of essential ANC services such as nutritional counselling, immunization, supplementation, and routine screenings. It allows frontline health workers to track the health status of both the mother and the unborn child, provide appropriate interventions, and ensure continuity of care throughout the pregnancy.

Data from the endline survey revealed a notable decline in early registration among women in the intervention block (Namkhana), where 75% of women registered their pregnancies within the first trimester, a 13-percentage point drop from the 88% baseline level. In contrast, the control block (Patharpratima) saw a smaller decline, from 82% at baseline to 66% at endline.

Registered Pregnancy within 12 weeks		
	Intervention (Namkhana)	Control (Patharpratima)
N	*428*	*433*
Endline	75%	66%
N	*404*	*404*
Baseline	88%	82%

Despite this decline from the baseline, when comparing endline data between the two blocks, Namkhana still outperformed Patharpratima, with a higher proportion of women registering early (75% vs. 66%). This suggests that while early registration remains relatively high in the intervention block, there are underlying factors that have affected performance over time.

One of the contributing factors to the decline in early registration appears to be a **drop in correct knowledge among health workers** about the recommended timing for pregnancy registration. Endline findings show that **only 42.9%** of healthcare providers in the intervention block correctly identified the appropriate stage of pregnancy for registration, compared to **91.7%** in the control block. This knowledge gap among providers has likely led to **weaker dissemination of vital information** to pregnant women, reducing the urgency or awareness around early registration.

In addition to this, socio-cultural and emotional factors also influence women's decisions to delay registration. Qualitative interviews with women and frontline workers revealed that many women are reluctant to disclose pregnancy early, driven by fears of miscarriage or social stigma. ASHA workers shared that ***"Some families don't inform us early. They wait until they're sure."*** The survey further probed into the reasons why women in the intervention block did not register pregnancy within the first 12 weeks. The key reason sited (51.7%) indicate the lack of clarity or confusion due to physical symptoms, also evidenced through qualitative discussions. ***"Periods hadn't fully stopped, so I was unsure if I was pregnant at first." "I took the pregnancy test two and a half months later because my periods hadn't completely stopped. I wasn't sure I was pregnant at first."*** This indicates the need for dedicated awareness on reproductive health and engagement in the community with adolescent girls and young women regarding their bodies. The comparison of baseline and endline data revealed a shift in the reasons cited by women.

Reasons for not registering the pregnancy

Intervention (Namkhana)	Baseline (N-404)	Endline (N-428)
ASHA did not visit our home	5.0%	5.6%
I didn't know that it had to be done in 12 weeks	40.0%	15.0%
No such service related to ANC is available before 12 weeks	-	1.9%
Household members said that there was no need to register so early	25.0%	8.4%
Could not understood that I have missed my period.	-	57.9%
Others	30.0%	11.2%

A major improvement can be observed on two aspects:

The knowledge level of women in intervention block on recommended timing for registration has improved significantly which resulted a dip in non-awareness from 40% in baseline to 15% in endline.

Family members are convinced and influencing to register within 3 months. This suggested a **positive shift in family attitudes**, possibly resulting from more inclusive counselling or community sensitization efforts led by ASHAs and other frontline workers. However there is need for more counselling of familymembers expressed by the pregnant women.

"When ASHA or SSDC come, they talk to whoever is present, but it's not mandatory for family members. So they don't always hear the advice directly."

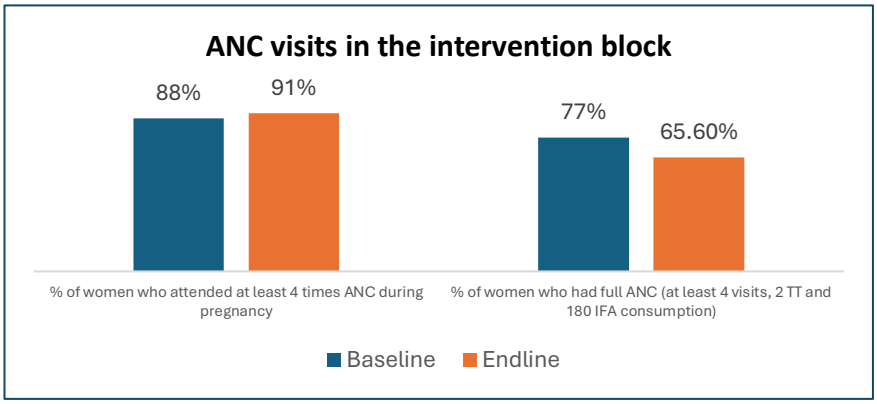
A new and major barrier reported at endline by 57.9% of women was that they could not understand they had missed their period. This finding aligns with earlier qualitative insights where women expressed uncertainty about early pregnancy symptoms. It reflects a critical gap in reproductive health awareness, which may be linked to low education, irregular menstrual cycles, or misconceptions.

Another reason cited under the 'other' category for delayed pregnancy registration beyond the first three months was migration—specifically, women living away with their husbands and registering the pregnancy only upon returning to their native place. It was also noted that many young women prefer to relocate to their parental homes during pregnancy. ***" Many young girls prefer to move to their native place and stay with their parents"***

4.2.2 Number of ANC Visits

Early registration (within 12 weeks of pregnancy) of pregnancy increases the total ANC visits made by pregnant women during pregnancy, ensures better utilization of ANC services and improves maternal and foetal health.

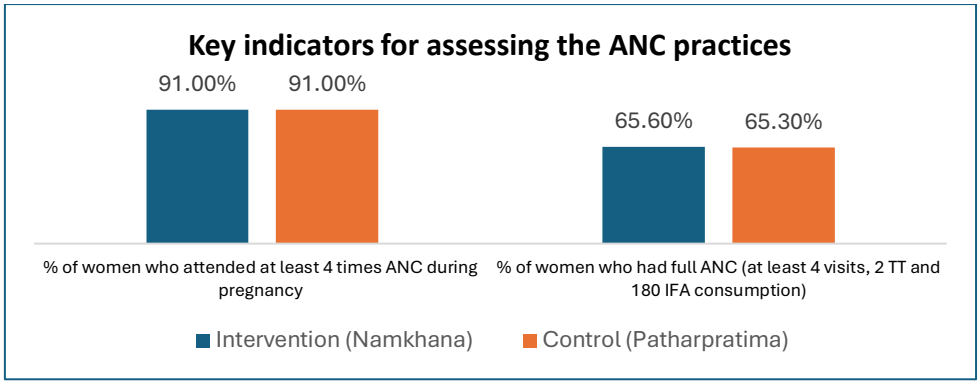
Two key maternal health indicators—receiving at least four antenatal care (ANC) visits during pregnancy and completion of full ANC (minimum of four ANC visits, two doses of tetanus toxoid, and consumption of 180 IFA tablets)—were assessed among the mothers during the baseline and endline surveys. It is observed a **slight improvement (3 percentage points) in endline from baseline** in the proportion of mothers attending at least four ANC visits during pregnancy. This suggests **improved awareness and follow-up mechanisms**, possibly influenced by community health workers. While comparing the full ANC, it is found that despite more women attending more than 4 ANC visits, the percentage completing **full ANC** has **declined by over 11 percentage points in endline**. This drop indicates **gaps in service delivery or adherence**, particularly in tetanus immunization (139 out of 212) and/or minimum 180 IFA tablet consumption (141 out of 212).



When compared the same indicators for the lactating mothers of intervention and control blocks during endline, it was found that percentage of women who attended at least 4 ANCs during her pregnancy journey is identical in both the blocks. This suggests that basic ANC outreach and frequency of contact have reached parity across the two settings, possibly due to uniform government ANC protocols being followed.

The completion of full ANC is also nearly identical in both groups, with only a 0.3 percentage point difference.

ANC practices by women -Intervention vs. control



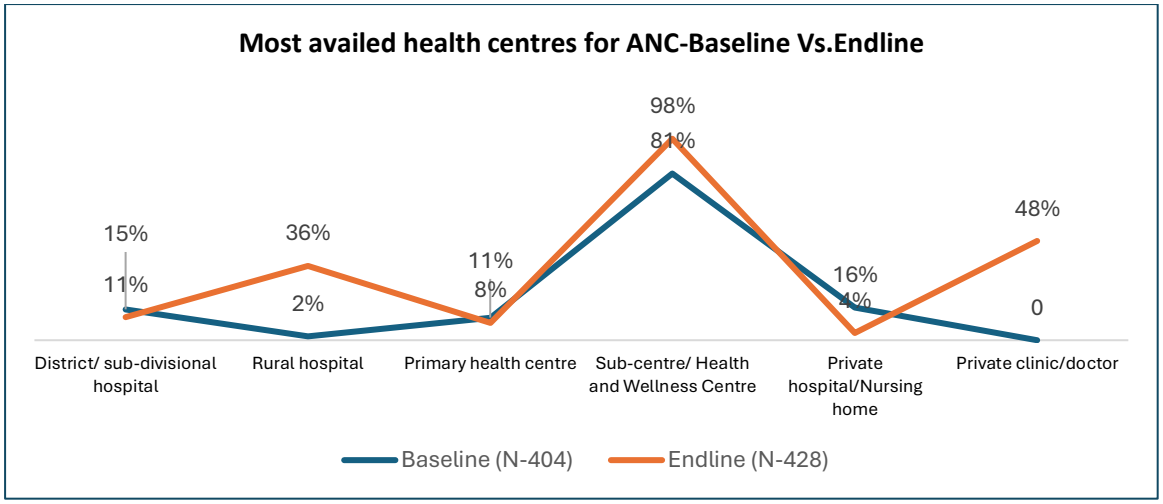
4.2.3 Services received during ANC

The endline data reveals a generally high uptake of key antenatal care (ANC) services across both intervention (Namkhana) and control (Patharpratima) blocks. However, the intervention block consistently shows higher coverage and better performance across most indicators, especially in **counselling on iodised salt consumption** and **immunization (Td booster)** pointing to the effectiveness of targeted interventions and capacity-building efforts in that area.

Endline comparison	Intervention (N-428)	Control (N-433)
ANM or ASHA advised you to consume Iodised salt during this time of pregnancy	83.6%	60.7%
Received albendazole	70.1%	63.7%
IFA tablets were given	99.3%	96.1%
Calcium tablets were given	98.8%	96.1%
Blood pressure measured	99.8%	99.5%
Weight measured	99.8%	99.8%
Urine test done	98.8%	98.8%
Blood test done	99.8%	97.9%
Received booster dose of Td during the last pregnancy	90.0%	73.9%

4.2.4 Type of health facilities availed for ANC

The data shows a positive trend in the uptake of public health facilities, particularly sub-centres and rural hospitals, indicating improved community reliance on the public health system for ANC services. However, the sharp rise in use of private clinics/doctors (48%) at endline also suggests that a significant portion of the population continues to seek private care, likely due to perceived better quality, convenience, or responsiveness.



While interacting with one of the husbands of a lactating mother about the preference of private doctor over government health facility, they stated that private healthcare was preferred due to concerns regarding the admissions and lack of specialists. The mother had certain complications of vaginal bleeding which they managed at home under private doctor's advice. They did the regular checkups in the sub centers.

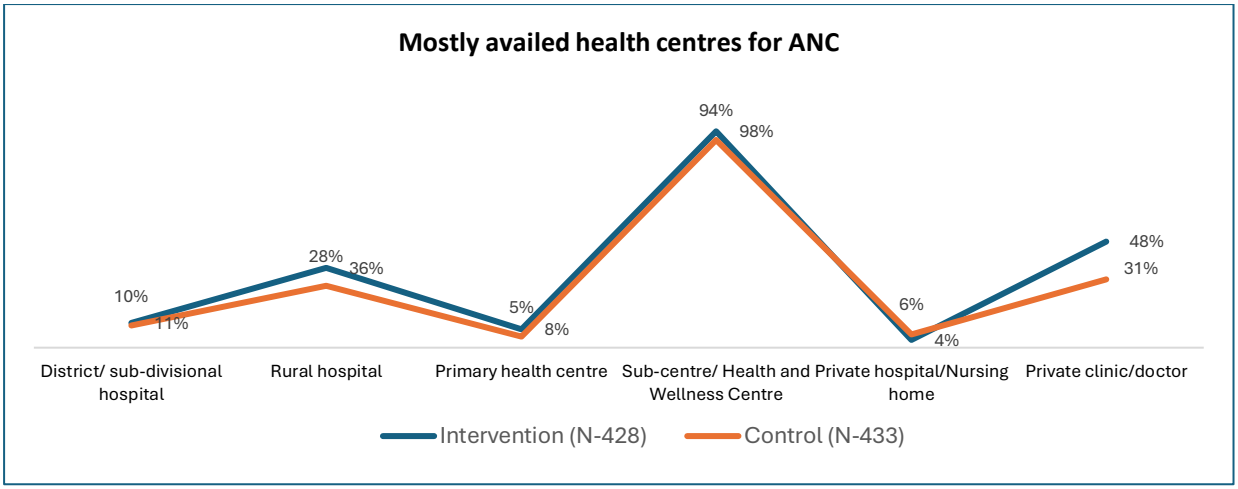
"We didn't go to the government hospital because they would have admitted her, and I couldn't afford to stay there for 5-6 days. That's why we chose a private doctor instead."

While interacting with the family members of a pregnant woman in Haripur, they also pointed out the limited scope of medication availability in public health facilities, which pushes families toward out-of-pocket private care. ***"The government facilities only give iron and calcium. But what about gas, acidity, bleeding? We have to go private for those issues."***

Further comparison between intervention and control, both the blocks showed a strong dependence on **Sub-centres** for ANC services. While the data highlights stronger service utilization and better coordination within the public health system, the high dependency in private healthcare usage in intervention block pointed out the need for enhanced quality assurance and trust-building within government-run facilities to ensure long-term reliance on the public sector. It also requires working and tracking medical supply to ensure the required medicines are adequately stocked at the health facility.

A currently pregnant mother shared her concern by saying ***"Even though the Sub-Centre gives free checkups and USGs, I've only gone once. I prefer going to a private doctor because I had twins and a C-section earlier. I feel the treatment is better there."***- This indicated trust issues and lack of perceived quality in public health infrastructure despite cost-free services.

Most availed health centres for ANC-Intervention Vs. control



4.3 High risk pregnancy identification and management

A critical component of this project's intervention was the **early identification and management of high-risk pregnancies (HRPs)**. The health care providers were trained on identification of high-risk pregnancies, and the project also equipped the sub centres with different devices like haemoglobin meters and blood pressure monitors for better screening of high-risk pregnancies.

4.3.1 Knowledge about danger signs during pregnancy among women

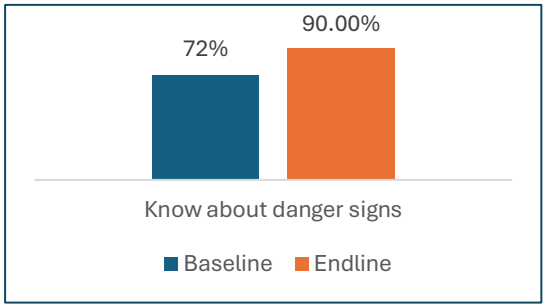
During the endline, the women were assessed on their knowledge level based on a **the danger signs of pregnancy**. The data revealed 8 % women have good knowledge about 7 or more danger signs of pregnancy compared to only 0.9% in the control block.This significant difference showed that intervention efforts have successfully built deeper knowledge among a small but notable group of women. Simultaneously, high proportion (66.4%-intervention, 69.1%-Control) in both groups indicated a serious gap in awareness and understanding of maternal and child health topics, even after intervention efforts. Hence, there is a pressing need to strengthen IEC/BCC strategies and enhance community-level engagement and counselling by frontline workers.

Level of Knowledge/ awareness on danger signs of pregnancy

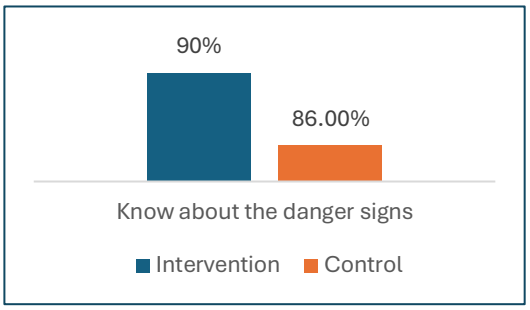
	Intervention N-428	Control N-433	Remarks
0 to 3	66.4%	69.1%	Need improvement
4-6	25.5%	30.0%	Moderate knowledge
7 or more	8.2%	0.9%	Good

Crucially, the proportion of women who " know any danger signs" demonstrated a sharp rise from 72% to 90% from baseline to endline and also the comparison between intervention and control showed a rise in awareness in intervention compared to control by 4 percent points. These reflect the positive impact of targeted community-level interventions.

Baseline Vs Endline: Intervention block

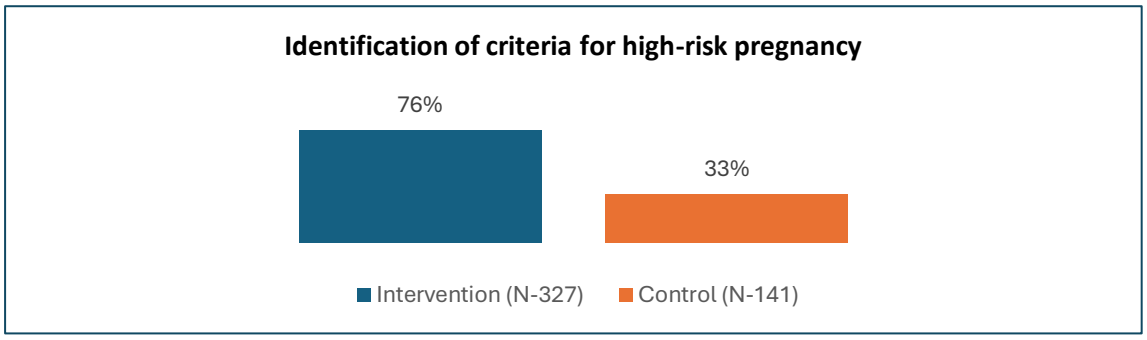


Intervention Vs Comparison



4.3.2. Knowledge regarding identification of high-risk pregnancy

The women were asked about knowing any one criterion they have experienced about high-risk pregnancy. A significant proportion (76%) were able to identify atleast one high risk condition in the intervention (Namkhana) block, a difference of 43% points over the control block (Patharpratima).



The intervention block consistently exhibited higher identification rates across nearly all high-risk pregnancy criteria, suggesting that capacity-building, better training, and improved data tracking systems have strengthened risk detection. Overall the knowledge level of women in control block (N-141) is less than intervention (N-327).

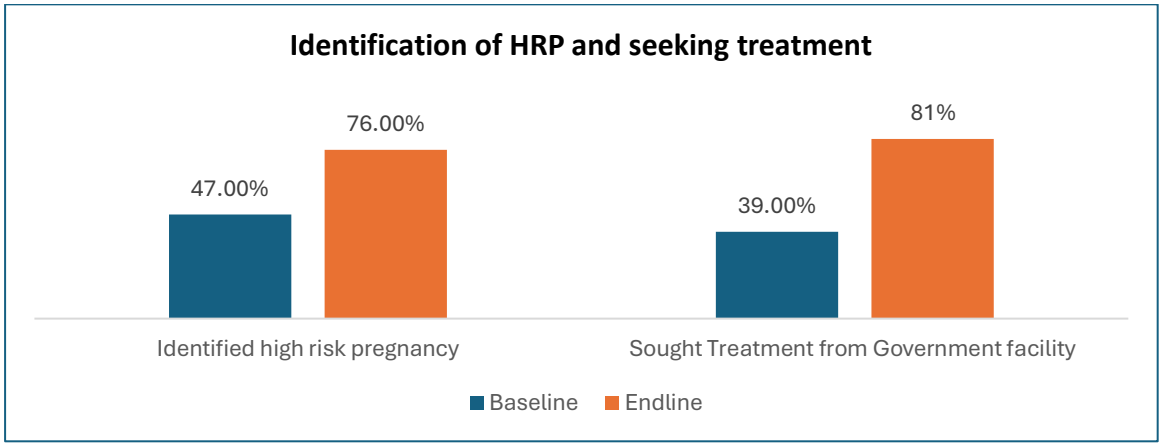
This data confirms that focused interventions have begun to shift knowledge and practices around HRP detection but also reveals areas requiring systematic strengthening and resource support.

	Intervention (Namkhana) (N-327)	Control (Patharpratima) (N-141)
Severe Anaemia	29.5%	6.6%
Pregnancy induced hypertension, pre-eclampsia, Pre-eclampsia toxaemia	4.8%	2.6%
Syphilis/ HIV Positive	0.7%	0.0%
Gestational Diabetes Mellitus	1.2%	1.6%
Hypothyroidism	16.3%	15.5%
Young primi (less than 20 years) or Elderly gravida (more than 35 years)	22.8%	8.7%
Twin / Multiple pregnancy	2.9%	0.5%
Malpresentation	1.9%	0.9%
Previous LSCS	6.5%	2.1%

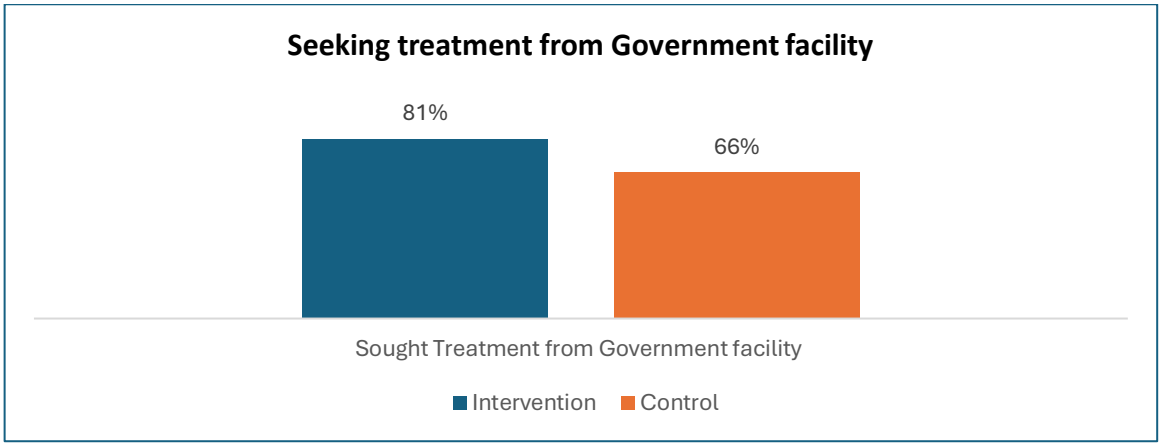
	Intervention (Namkhana) (N-327)	Control (Patharpratima) (N-141)
Low lying placenta, Placenta previa	1.7%	0.2%
Positive Bad obstetric history	12.7%	4.2%

4.3.3 Seeking treatment for High-Risk Pregnancy at a facility

The key indicators about identification and management of high-risk pregnancies were further compared between baseline and endline stage for women of Namkhana. There has been a remarkable improvement in both the identification and seeking treatment for high-risk pregnancies (HRP) in Namkhana from baseline to endline.



Further comparison of treatment seeking behaviour from Government facility between intervention and control reveals that women from intervention block sought more treatment from Government health facility compared to control block.



4.4 Delivery and post-natal care

The 3-year project strengthened the quality of **institutional deliveries and postnatal care**, ensuring that women received essential services within the golden 48-hour window after childbirth.

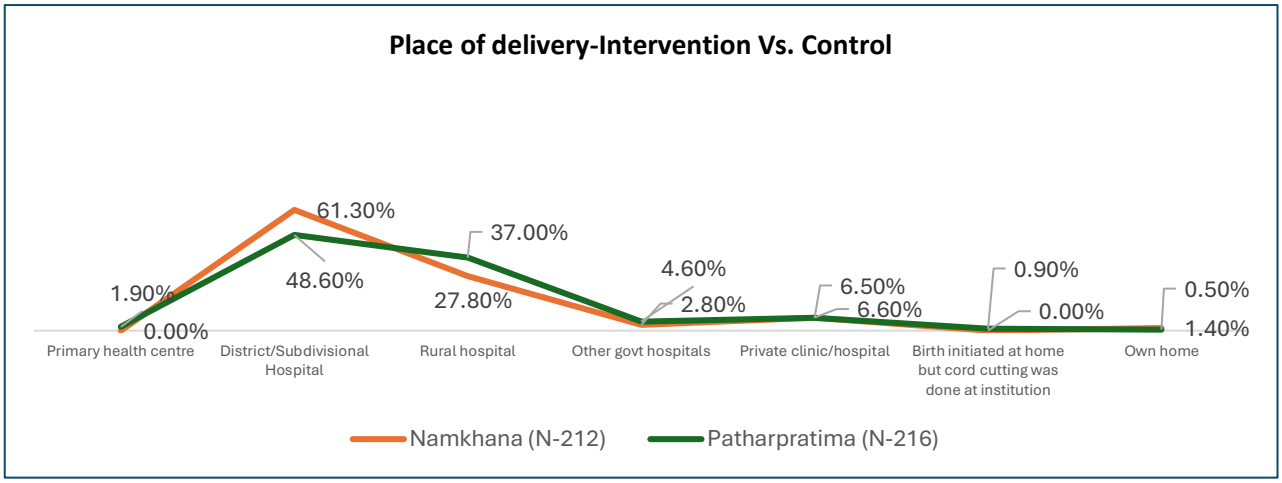
4.4.1 Place of delivery

The data showed a strong and growing reliance on public health infrastructure for deliveries, with minimal dependence on the private sector. While comparing place of delivery between intervention and control blocks, it was seen that in control block, there are still 1% mother practised home-based deliveries where as in the intervention block, 100% reported institutional delivery. Also, the selection of subdivision level hospital for institutional delivery was higher in the intervention block.

Place of delivery at the intervention block: Baseline Vs. Endline

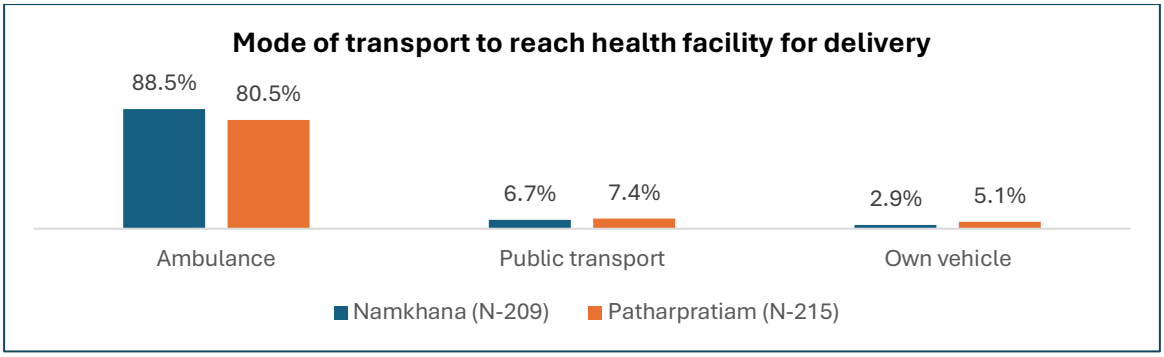
	Base Namkhana (N-404)	End Namkhana (N-212)
Primary health centre	0.0%	0.0%
District/Subdivisional Hospital	52.5%	61.3%
Rural hospital	32.9%	27.8%
Other govt hospitals	2.5%	2.8%
Private clinic/hospital	6.7%	6.6%
Birth initiated at home but cord cutting was done at institution	4.5%	0.0%
Own home	1.0%	1.4%

Place of delivery Intervention vs. control



4.4.2 Mode of transport used to reach health facility

Transportation is a critical factor for safe institutional delivery in Sundarban area. Ambulance was the most critical mode for the intervention block (88.5%) and control block (80.5%). The use of own vehicle and public transport were relatively low across both the blocks. Interestingly, no respondent reported using a boat to reach the hospital. However, qualitative interviews conducted in Mousuni Island revealed that all the pregnant women initially travel by boat to reach the riverbank, from where an ambulance then transports them to the Dwariknagar Rural Hospital or Kakdwip Sub-Divisional Hospital. As the ambulance is the final mode of transport and present at the pickup point, women reported it as their primary means of reaching the health facility.



During baseline, 66% mothers reported to receive referral transport facility for institutional delivery whereas the availability of ambulance to reach the health facility for delivery has increased significantly to 88.5% in the intervention block from baseline. This improvement suggests that:

- *There has been enhanced coordination and availability of ambulance or referral transport services under the intervention.*
- *The rise may be attributed to better awareness among mothers about the entitlement to free transport services and improved linkages established by frontline workers (such as ASHAs and ANMs).*

4.4.3 Postnatal Care by a Skilled Birth Attendant within 48 hours of childbirth

Postnatal care (PNC) within 48 hours of childbirth by a skilled birth attendant is a critical component of maternal and newborn health services. In intervention, the coverage of PNC remained consistently high, with a slight drop from 95% at baseline to 92% at endline, indicating sustained service delivery despite minor fluctuations. In contrast, control block recorded a comparatively lower rate of 87% in the endline, showing a notable gap when compared to Namkhana.

	Namkhana-Baseline	Namkhana-Endline	Patharpratima-Endline
% of women who received postnatal care within 48 hours of childbirth regardless of place of delivery	95%	92%	87%

This variation may reflect differences in postnatal outreach effectiveness, facility readiness, or follow-up practices between the two blocks. While intervention demonstrates a relatively stable and effective postnatal care system, control may require targeted interventions to strengthen early postnatal service coverage, especially through improved coordination, monitoring, and support for frontline health workers.

4.5 Home Based Newborn Care

The mothers from both intervention and control blocks were interviewed to understand the childcare services received from the health facilities. The details were collected for the youngest child aged up to 2 years. The average age of the index child was 9 months and 11 months in Namkhana and Patharpratima respectively. Home based management of low birth weight was one of the key intervention areas of the Perinatal health project. During the endline survey the proportion of children with low birthweight were identified out of the sample in both Namkhana and Patharpratima.

4.5.1 Home-based management of children with low birthweight

The data indicates that the proportion of children born with low birth weight (<2.5 kg) has remained relatively stable across both geographies from baseline to endline. In Namkhana, the percentage saw a slight increase from 15.8% to 16.5%. This marginal rise is not necessarily a negative trend; rather, it reflects improved awareness among mothers and strengthened capacity of healthcare providers to accurately identify and report low birth weight cases. Previously, there was a tendency among health workers to avoid classifying children weighing between 2.4 and 2.5 kg as low birth weight. However, after three years of consistent intervention and capacity building, this practice has changed, leading to more accurate reporting.

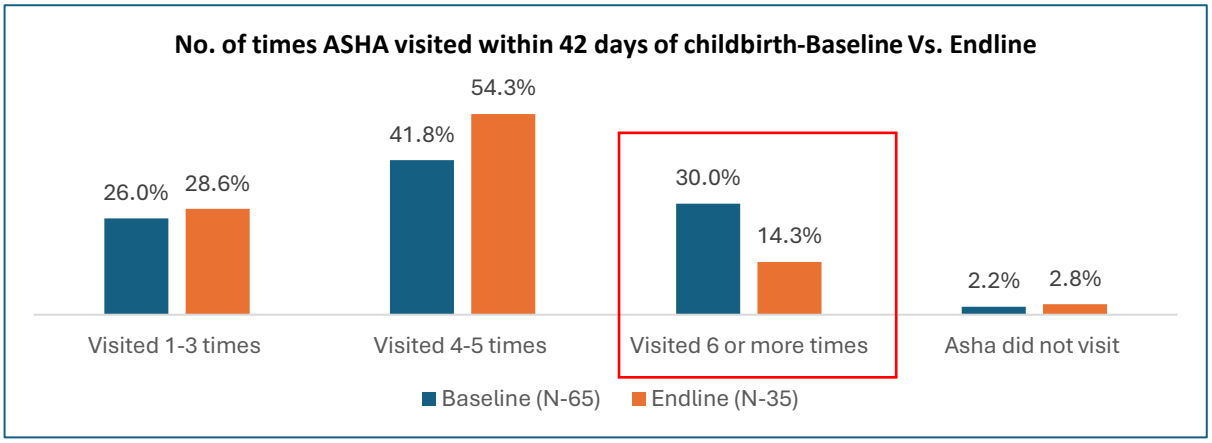
	Namkhana-Baseline	Namkhana-Endline
Proportion of children with low birth weight (<2.5 kg)	15.8%	16.5%

While comparing the proportion of children with low birth weight between intervention and control, Patharpratima showed a relatively higher proportion compared to Namkhana. The mothers from Patharpratima lacked the awareness level about

	Namkhana-Endline	Patharpratima-Endline
Proportion of children with low birth weight (<2.5 kg)	16.5%	18.1%

Home visits by health workers within 42 days after the child's birth: Under homebased newborn care, the key activities constitute the provision of care of every new-born through a series of home visit by an ASHA within the first 6 weeks or 42 days of life. Additional home visit for preterm and low birth weight babies is recommended. In this context, the mothers with LBW children were enquired of the number of home visits made by the ASHA workers.

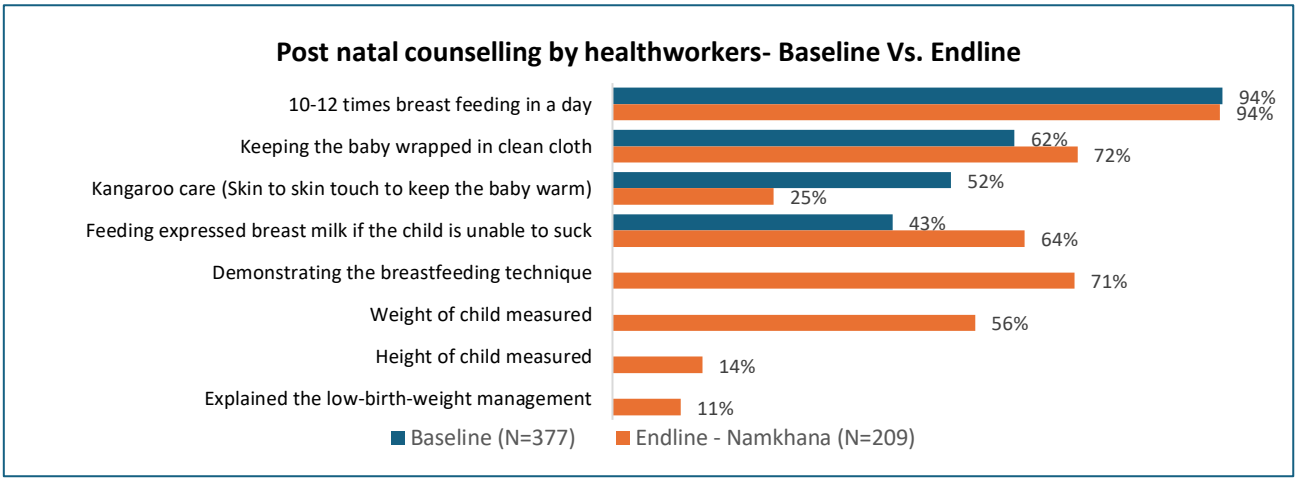
The comparison between baseline and endline data in the intervention block indicate a notable improvement in the frequency (4 to 5 times) of ASHA visits during the first 6 weeks of childbirth. This indicates a stronger follow-up and engagement by frontline health workers. However, for children with low birth weight, only 14.3% respondents reported to ASHA workers to have conducted 6 or more visits within 42 days, marking a decline of 15.7% points from baseline. However, there is a high possibility of



recall bias as the reported number of visits is based solely on the mothers' ability to recall, and therefore,

may not accurately reflect the actual number of visits made. Additionally, since the endline survey was conducted at the end of the third year of intervention and included mothers of children up to two years of age, **recall accuracy may vary**, potentially differing the actual scenario.
Overall, the data reflects good outreach by ASHAs but highlights the need for greater consistency in achieving the recommended number of postnatal home visits in the intervention block.

4.5.2 Post natal counselling by health workers during home visits

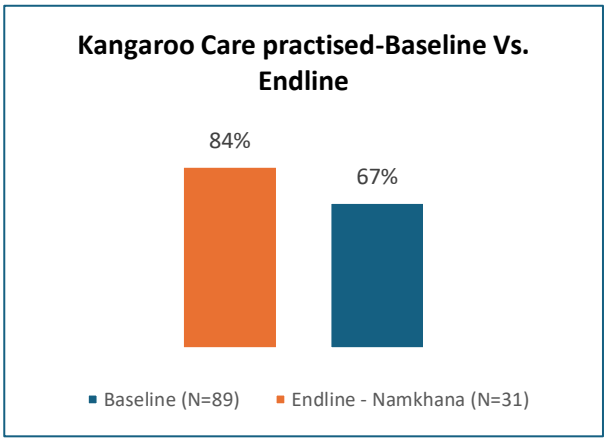


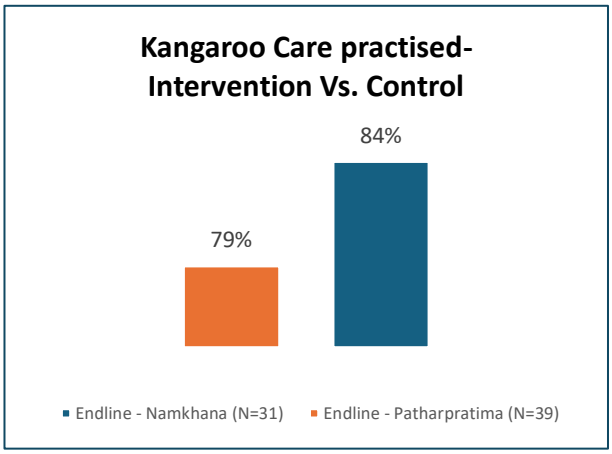
The data indicates a significant improvement in the quality and comprehensiveness of postnatal counselling provided by ASHA workers during home visits within the first 42 days after childbirth. While the recommendation to breastfeed 10 to 12 times a day remained consistent from baseline to endline, there was a marked increase in the promotion of evidence-based neonatal care practices. At baseline, 62% of mothers were advised to keep the baby wrapped and 52% received guidance on Kangaroo Mother Care (KMC). By the endline, counselling had become more clinically focused, with 72% of mothers being advised on KMC and 71% reporting that they were shown how to breastfeed effectively.

This progression indicates enhanced capacity and training among frontline health workers, leading to more skill-based and impactful counselling. The rise in demonstration-based support also reflects an encouraging move from information-sharing to skill transfer, which is critical for improving neonatal health outcomes.

4.5.3 Kangaroo mother care

Mothers who had delivered a child with low birth weight were asked whether they practised Kangaroo Care (skin to skin touch) for LBW Child. The first graph shows a substantial improvement in the practice of Kangaroo Mother Care (KMC) in intervention block between the baseline and endline. At baseline, only 67% of mothers reported practicing KMC, while this rose significantly to 84% at endline, indicating a 17-percentage point increase.





The second graph compares the data between Namkhana (intervention block) and Patharpratima (control block). Surprisingly, Patharpratima recorded a slightly higher practice rate of KMC at 84%, compared to 79% in Namkhana. Although both blocks show high adoption. The slightly better outcome in Patharpratima may be attributed to external influences or existing awareness mechanisms, even without direct intervention. Nonetheless, Namkhana's figures still reflect a notable improvement from its own baseline.

Case Study: "A Mother's warmth: How Skin-to-Skin saved tiny lives in Namkhana"

In the quiet, wind-swept delta of Namkhana, Moumita Ghorui gave birth to twin babies under fragile circumstances. One weighed barely 1.7 kg and battled jaundice; the other was just over 2 kg. With limited access to advanced neonatal care and living in a region prone to health system gaps, Moumita's odds seemed stacked against her newborns' survival.

But what followed was a story of simple yet powerful care—**Kangaroo Mother Care (KMC)**. Guided by ASHA workers and SSDC-supported community groups, Moumita embraced the practice of **skin-to-skin contact**, exclusive breastfeeding, and thermal protection right at home. This traditional-yet-scientific method became her lifeline.

In a region where medical access is often delayed by tides and terrain, Moumita's story shows how **a mother's touch, paired with grassroots support**, can rewrite neonatal survival. Kangaroo Care didn't just save lives — it empowered a mother with the confidence to care, protect, and thrive against the odds.

4.6 Coordination and referral system

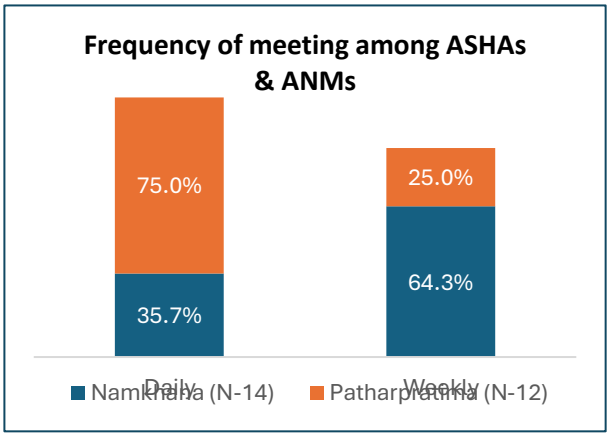
Effective coordination between ASHAs and ANMs ensures that pregnant women and newborns receive **timely, appropriate, and continuous care**. ASHAs, as frontline community workers, are often the first to identify early signs of complications or risks during pregnancy, childbirth, or in the postnatal period.

When they are well-connected with ANMs, they can **promptly refer high-risk cases** for clinical evaluation, thus preventing delays in care.

This coordination ensures:

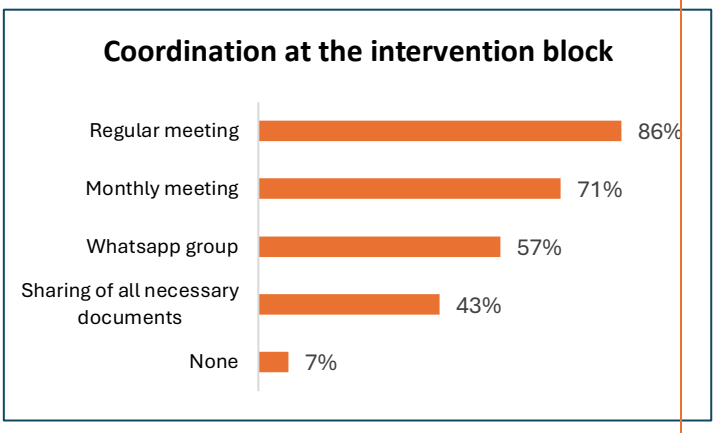
- **Early identification and referral** of high-risk pregnancies to health facilities.
- **Continuity of care** from the community to facility and back, ensuring no mother or child is lost to follow-up.
- **Better tracking and follow-up** of ANC (Antenatal Care), institutional deliveries, immunization, and postnatal care.
- **Efficient utilization of resources**, as ASHAs can alert ANMs in advance, enabling targeted and prioritized home visits or facility-based services.

Moreover, a strong referral linkage builds trust among community members, improving **service uptake** such as institutional deliveries and child immunization. In order to maintain a continued coordination among the health workers, the ANMs and CHOs from the intervention block reported to meet with ASHAs and among themselves primarily through weekly meeting whereas in Patharpratima, daily meetings were more in practice.



One of the significant achievements of the project in the intervention block was the involvement of elected members of the Panchayati Raj Institutions, local government, in a structured mechanism for better coordination among the health workers in Namkhana in tracking high-risk pregnancy cases. "***At the very onset of the project, the team conducted an awareness raising camp with PRI on the intervention and its aim.***", mentioned a PRI member in Namkhana.

A notable 86% of health workers in the intervention block highlighted conducting regular meetings for management of high risk pregnancies, while 71% reported participating in monthly meetings. This reflects a consistent and organized approach to communication between frontline health workers such as ASHAs and ANMs. These meeting platforms serve as crucial nodes for information sharing, review of high-risk cases, and collective decision-making, thereby ensuring timely interventions and referrals.



*The widespread adoption of regular and monthly meetings underscores the project's **strength in building a coordinated care framework**, which is essential for managing complex cases like high-risk pregnancies. It also suggests that the project has enhanced system-level preparedness and responsiveness, which can contribute to improved maternal and neonatal outcomes. Sustaining and scaling such mechanisms could further institutionalize high-quality, community-based maternal healthcare.*

Timely emergency response and community support during labor – Story from Haripur

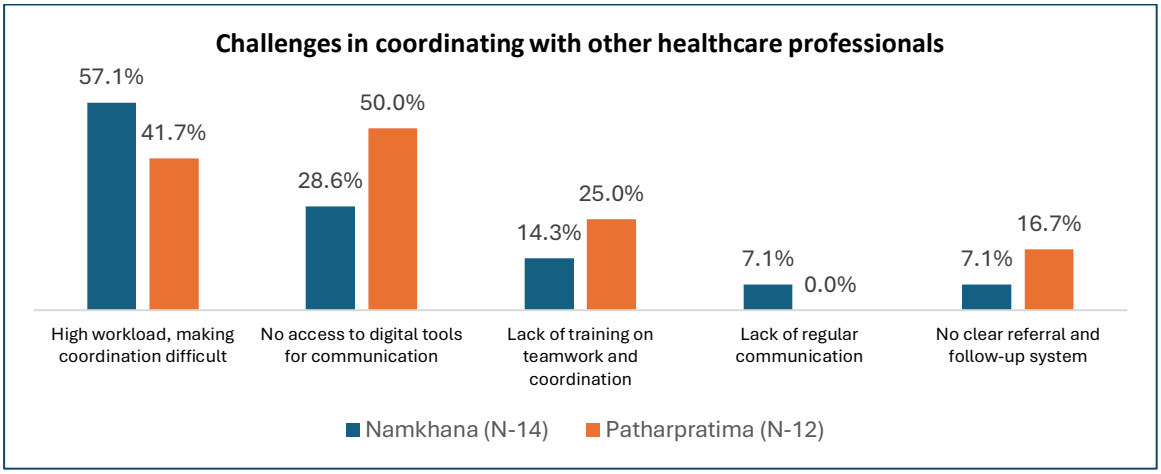
"When the labor pains started, it was just the two of us. I called the ASHA Worker, and she came with a vehicle right away. We went straight to Kakdwip because that's where proper delivery facilities are."— Household Member

In a remote riverine village of Namkhana, a woman experiencing labor pain at night had no immediate family support except her husband. On being informed, the ASHA worker arrived promptly with a vehicle and accompanied the couple to Kakdwip hospital, a tertiary center with comprehensive obstetric care. This quick response prevented potential delays and complications during delivery.

This case underscores the critical role of ASHA workers in emergency referral and transport coordination, especially in geographically challenging contexts. Despite infrastructural constraints and distance from higher facilities, the household trusted the ASHA to manage the situation, reflecting the project's success in building community confidence and functional emergency response pathways.

Challenges faced in coordinating with other healthcare professionals

Findings also highlighted key operational challenges that hinder effective coordination among frontline health workers. In Namkhana, high workload was reported by 57.1% of respondents, substantially higher than 41.7% in Patharpratima—suggesting that the burden of multiple responsibilities may be overwhelming health staff, limiting the time and energy available for collaborative care planning and communication. This reflects a potential risk to the quality and timeliness of maternal and child health (MCH) services, especially in high-demand areas. Conversely, limited access to digital communication tools was a more pressing challenge in Patharpratima (50%) compared to 28.6% in Namkhana, indicating infrastructure gaps that could obstruct swift information exchange and real-time coordination.



4.7 Facility Readiness

To strengthen frontline service delivery, the project strategically focused on facility readiness, particularly in climate-vulnerable geographies. This involved equipping sub-centers with Point-of-Care Testing (PoCT) devices such as haemoglobin meters, BP monitors, and fetal dopplers and improving Water, Sanitation, and Hygiene (WASH) infrastructure. These infrastructure investments aimed to

create a more resilient and responsive primary healthcare system, capable of meeting the needs of pregnant women and newborns in in one of the most climate-vulnerable regions.

As part of the endline evaluation, the functionality of PoCT devices was assessed across 14 sub-centers in the intervention arm. 100% facilities confirmed device availability and functionality, reflecting successful procurement and maintenance efforts.

The **WASH improvements** in the health facilities have improved infection prevention control (preventing further diseases to patients) and strengthened the infrastructure in the selected sub-centres. All three interviewed facilities—Dakshin Chandranagar SC, Kusumtala SC, and Baliara New SC—have received safe drinking water systems (RO), sanitation facilities, and water points. This ensures that both staff and patients have access to clean water and proper sanitation. 100% of the surveyed centres reported round-the-clock water supply, safe drinking water, and adequate toilets for both staff and patients. This creates a cleaner and more patient-friendly environment.

However, there are some differences in how regularly the centres are cleaned. For example, Kusumtala SC is cleaned daily, while Dakshin Chandranagar and Baliara New SC are cleaned less frequently, which can affect hygiene and safety. Furthermore, despite infrastructure improvements, flooding remains a recurrent issue for Dakshin Chandranagar and Baliare New sub centres during the rainy season, indicating a vulnerability that could compromise service continuity.

Gram Panchayet	Haripur	Mousuni	Mousuni
Subcentre	Dakshin Chandranagar SC	Kusumtala SC	Baliara New SC
Type of WASH intervention	Construction of sanitation facilities, Installation of drinking water source- RO	Installation of drinking water source- RO	Installation of drinking water source- RO, Construction of water points
Condition of health facility during the rainy season/natural disasters	Flooded	No impact	Flooded
Availability of 24/7 running water service at all times	Yes	Yes	Yes
Availability of functional water source available at the point of care	Yes	Yes	Yes
Availability of safe drinking water at the facility for staff	Yes	Yes	Yes
Availability of safe drinking water at the facility for patient	Yes	Yes	Yes
Availability of adequate sanitation facility for staff	Yes	Yes	Yes
Availability of adequate sanitation facility for patients	Yes	Yes	Yes
Facility cleaned regularly to maintain hygiene	Once in every few days	Daily	Weekly

The interventions have significantly improved basic WASH infrastructure and service delivery readiness in high-risk geographies. However, for these improvements to have **sustained impact**, there is a need for:

- **Standardization of hygiene practices** across all facilities, including **daily cleaning protocols**
- **Disaster-proofing infrastructure**, particularly in flood-prone sub-centres, to maintain uninterrupted access and service delivery;
- Continuous **monitoring and support for maintenance**, ensuring WASH improvements translate into consistent quality of care and infection control.

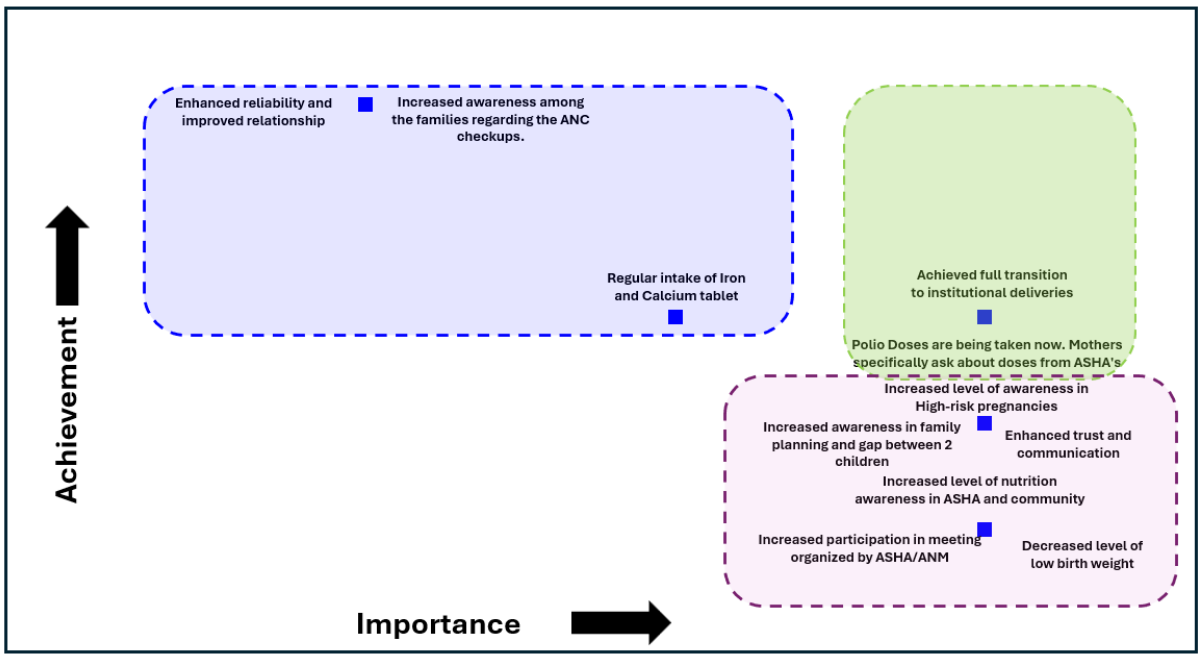
4.8 Most Significant Change

The Most Significant Change (MSC) framework used in discussions with ASHA workers revealed notable and wide-ranging shifts in maternal and child healthcare practices, as perceived and experienced by frontline workers. These changes span multiple domains—ranging from service uptake and community trust to enhanced health awareness and improved care-seeking behaviors.

ASHAs rated each change based on its perceived **importance** and the **level of achievement** in overcoming challenges. Notably, all achievement scores ranged between **8 and 10**, indicating a consistently **high level of accomplishment** across all indicators.

	Importance	Achievement
Polio Doses are being taken now. Mothers specifically ask about doses from ASHA's	10	10
Enhanced reliability and improved relationship	8	10
Enhanced trust and communication	10	9
Increased awareness among the families regarding the ANC checkups.	8	10
Increased level of nutrition awareness in ASHA and community	10	8
Increased level of awareness in High-risk pregnancies	10	9
Increased awareness in family planning and gap between 2 children	10	8
Decreased level of low birth weight	10	8
Regular intake of Iron and Calcium tablet	9	9
Increased participation in meeting organized by ASHA/ANM	10	8
Achieved full transition to institutional deliveries	10	10

Based on the importance of key changes and the achievement of those changes as reported by the ASHAs, a quadrant analysis has been done.



This diagram presented a **strategic quadrant analysis** of most significant changes based on their **perceived importance** (X-axis) and **level of achievement** (Y-axis). The positioning of indicators in the diagram helps prioritize program actions by showing where successes have been achieved and where further focus or investment is needed.

Top-Left Quadrant – High Achievement, Moderate Importance

Changes:

- Enhanced reliability and improved relationship between ASHA and pregnant/lactating mothers
- Increased awareness about ANC checkups among families
- Regular intake of iron and calcium tablets

These are strong program outcomes, successfully realized on the ground. While ASHAs rated these slightly lower in importance relative to other outcomes, their high achievement indicates that communication and service delivery mechanisms are working effectively. These outcomes form a solid base to build further awareness around their longer-term significance in maternal and newborn health.

Top-Right Quadrant – High Achievement, High Importance

Changes:

- Achieved full transition to institutional deliveries
- Polio doses are being taken regularly, with mothers proactively asking ASHAs

These represent core successes of the intervention—highly valued and fully realized. They demonstrate exemplary alignment between program objectives, community uptake, and ASHA engagement. These

outcomes not only mark significant progress but also offer strong models for sustaining gains and scaling to other related areas, such as expanded immunization and perinatal care.

Bottom-Right Quadrant – High Importance, Moderate to High Achievement

Changes:

- Awareness of high-risk pregnancies
- Awareness in family planning and birth spacing
- Trust and communication between ASHA and community
- Nutrition awareness
- Participation in ASHA/ANM meetings
- Decreased level of low birth weight

These areas are seen as highly important and already demonstrate **strong levels of achievement (score of 8)**, reflecting considerable progress. However, given their centrality to the program's goals and their role in influencing long-term maternal and child health outcomes, they deserve **continued investment and strengthening**. The focus should now shift toward deepening impact, addressing remaining barriers, and reinforcing behavioral change—particularly through sustained community engagement, tailored messaging, and supportive supervision.

Conclusion

The intervention in Namkhana block has led to **notable improvements in maternal and newborn healthcare delivery**, driven by targeted capacity-building, enhanced frontline engagement, improved facility readiness, and strengthened system coordination. Frontline workers demonstrated increased confidence, adherence to protocols, and more proactive community outreach. Women showed better knowledge and service-seeking behaviors—especially regarding HRP identification, early registration, and postnatal care.

However, challenges persist. While early pregnancy registration declined from baseline, underlying reasons include provider knowledge gaps and socio-cultural hesitancies. Similarly, although institutional delivery and service uptake improved, continued reliance on private care facilities points to ongoing concerns around perceived quality in public facilities.

Chapter 5: Community Engagement

5.1 Engagement of Women's group

The project also engaged Self-Help Groups (SHGs) in Sundarbans to build community-level awareness and engagement around maternal and child health. Recognizing the existing structure and influence of SHGs at the Gram Panchayat (GP) level, the intervention approached these groups to integrate health discussions into their regular meetings. Initial resistance stemming from time constraints, were eased over a period of time as the discussions were integrated into their monthly meetings. When participation of women at centralized training venues proved difficult, Tdh shifted to decentralized, village-based training conducted in familiar community spaces which significantly improved accessibility and engagement.

During the endline evaluation, focused group discussion with members of women group were

conducted in Mousuni, Haripur, Fraserganj GP to discuss the common challenges faced by pregnant women and mothers in their neighbourhoods. The issues emerging include:

- Early marriages and pregnancies, especially via elopement
- High rates of anaemia and malnutrition among women
- Lack of immediate access to quality health care or diagnostic services
- Superstitions and poor hygiene practices
- Premature births and low birth weight babies

The discussions further highlighted the role played by the women to spread awareness in their community on maternal and child health. The group members certified the **effectiveness of training, tools and strategy** designed under the project for their improved capacity to raise awareness:

Training and Knowledge transfer

Participants widely acknowledged that the training filled major knowledge gaps:

- Correct use of nutrition (color-coded food group system)
- Prevention and care for high-risk pregnancies
- Kangaroo Mother Care for LBW babies
- Importance of hand hygiene and institutional deliveries

- In *Namkhana*, SHG leaders trained fellow mothers after being trained by project workers. Use of visual IEC materials and demonstrations (like how to swaddle babies or cook vegetables properly) helped reinforce key messages.

Tool effectiveness

- **Matri Sakhi App:** Considered user-friendly, especially with audio features. Older or illiterate users benefited from its voice guides. *

- **IEC Materials:** Tools like the Ludo game were highly effective in engaging less literate members and simplifying health messages.

The women appreciated the use of images, simple language making information more relatable and actionable.

- ***"The board games help more. We make 4 mothers sit together for the game and when the dice stops on a certain box we ask them to read what is written there aloud. They find fun in the game too."***

Strategy

Groups used the ₹16,000 fund for:

- Antenatal checkups
- Newborn illness
- Emergency deliveries
- Transport and medicines

The fund has been managed transparently with loan records and repayment tracking.

- The interest-free nature and immediate availability of funds make it a critical support mechanism.
- ***So far, the fund has been disbursed in eight instances as mentioned by the "Uttar Shibpur Sohini SHG" in Fraserganj.***
- *"In our area, if you need money, you usually have to deposit your gold or pay 5 rupees per 100 rupees as interest. Here, there's no interest, and we provide the money immediately if someone needs help."*

This is an android based **multilingual digital communication tool. Though the first version was not widely adopted due to technical issues, feedback-driven updates led to a more functional, interactive version available on the Play Store.*

"The colored food chart makes it easier for us to explain what kind of food is needed—white for strength, green for health, red for energy." *— SHG Member, Freserganj*

"Earlier we used to throw away the water after boiling vegetables. Now we know that the nutrition is lost that way. We've changed our cooking habits." *— SHG Member, Namkhana*

"We had no idea about things like kangaroo care or how to feed during pregnancy. But after the trainings, even women like us—without much formal education—can now explain it to others." *— SHG Member, Mousuni*

After they are being capacitated by the SSDC staff, they are primarily engaged in the following key activities.

The group extends **interest-free loans of ₹2,000–3,000** to pregnant women and lactating mothers in emergencies, without collateral or formal paperwork. These are typically repaid within 2–3 months

The group uses tools like **nutrition flags**, **IEC posters**, and **interactive games (e.g., Ludo)** to explain pregnancy care, healthy dietary habits, and postnatal practices to mothers and families.

They educate mothers on prevention of infections, proper diet (including local and affordable options), and common superstitions that may be harmful such as traditional postnatal practices like purifying/cleaning newborns with a broom

The group acts as first responders—calling ASHA workers, arranging ambulance services, and escorting mothers to hospitals in emergencies if needed.

The group frequently raises issues like **teenage pregnancies and anemia**, trying to counter harmful social norms even in the face of local resistance.

5.1.1 Impact on community health and behaviour

The FGDs revealed clear shifts in perinatal health behaviour among the community women.

Increased antenatal visits (most women now attend more than 4 checkups)	*"If someone's haemoglobin is low, we push them to get tested and take iron tablets. The awareness is much higher now than before."— SHG Member, Haripur*
Reduction in home births; more institutional deliveries	*"We used to think giving birth at home was fine, but now after hearing about the risks in the sessions, even older family members are taking women to the hospital."— SHG Member, Namkhana*
Improved maternal diet and hygiene	
Growing awareness on spacing pregnancies and high-risk conditions	*"One mother had a low-birth-weight baby, and we explained kangaroo care. She followed it, and now the baby is doing well. Earlier, such cases often didn't survive."— SHG Member, Freserganj*

The SHG women have emerged as community health champions. In *Mousuni*, they reported directly guiding neighbors on pregnancy and newborn care. In *Freserganj*, the women held meetings with mothers-in-law to counter myths and promote better care.

In *Namkhana*, a woman who lost her baby in her first pregnancy due to inadequate attention was able to successfully deliver twins in her second pregnancy after being guided and monitored by ASHA, ANMs, and SSDC-trained SHG members.

In *Haripur*, a premature baby was saved and brought to health through timely intervention and hospital admission encouraged by SHG members.

The women groups expressed a strong willingness to continue health support services even beyond project support. The **three key motivating factors** explained by the group members to continue their support to community are as below

"Our training is more than just information—it has given us confidence. Now people in our community come to us for advice, not just money."— *SHG Member, Mousuni*

Reviving traditional women's groups to empower mothers – Insights from Freserganj

In the village of Freserganj, women's groups had previously existed in name only, with minimal participation or influence on health behaviors. SSDC, through its community engagement component, revitalized these groups by training local facilitators and ensuring structured, issue-based discussions—especially on maternal and newborn health.

One such group, consisting of 12 women, shared how their perceptions and practices had shifted since joining. A mother of two shared, *"Before, we didn't think iron tablets or tetanus injections mattered. But now we understand how they keep us and the baby safe."* The group learned about ANC registration, nutrition during pregnancy, and the importance of postnatal care.

The women also supported each other. When a younger member, only 19 years old and pregnant for the first time, was hesitant about going to the hospital for delivery, the group collectively encouraged her and helped arrange transport. She later delivered safely at the Namkhana BPHC and credited the group's influence.

This case illustrates how SSDC's revitalization of women's groups has gone beyond information-sharing, building a support system that empowers women to make safer health decisions during pregnancy and childbirth.

To keep their pace moving, the SHGs has recommended few suggestions to address the root cause of many problems in the community.

- ✓ Organize more awareness camps on different diseases
- ✓ Include adolescent girls and parents in early marriage prevention sessions
- ✓ Ensure digital literacy training for older SHG members

5.2 Gender Roles and Family Support

Gender mainstreaming is critical in the context of perinatal health projects as it ensures that interventions are inclusive, equitable, and responsive to the distinct needs and realities of women during pregnancy and childbirth. In many communities, **women's decision-making power** regarding their own health and their child's care remains limited, often influenced by cultural norms or family hierarchies. Without actively involving men and other household members, the project risks overlooking key influencers who can either enable or obstruct women's access to timely healthcare.

The family members of pregnant women and lactating mothers were interacted to understand the involvement of their partners in pregnancy care, postpartum care and childcare.

One of the husbands in Mousuni ensured proper care of her wife during pregnancy. Her wife's diet was rich in fruits, vegetables, milk, eggs, and fish to prevent anaemia. He ensured special care to follow dietary advice and monitor iron and calcium intake, adjusting when side effects appeared.
"I brought fruits so that she does not have Anaemia."
"When the government tablets created discomfort, we bought medicines from outside."

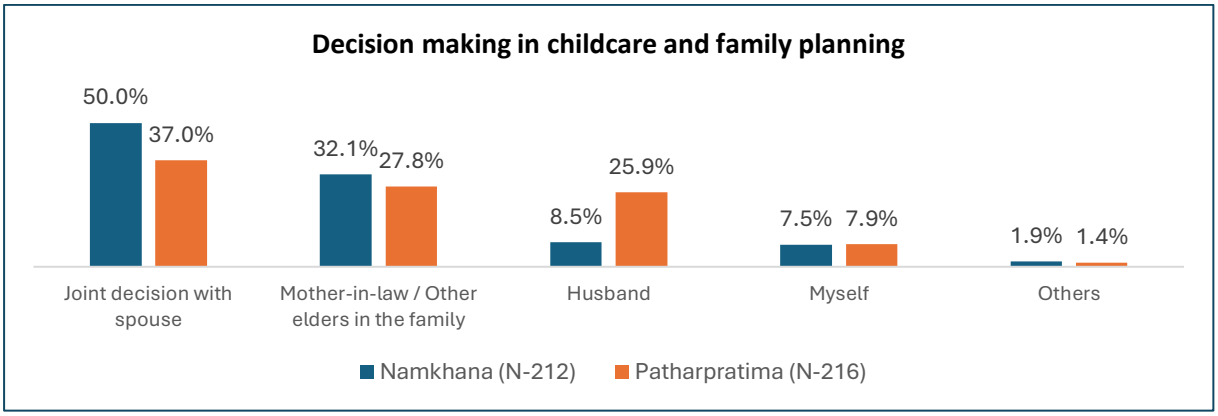
The mothers were further asked about the decision making on childcare related matters (like breastfeeding, institutional delivery, birth spacing. It is found that joint decision-making between mothers and their spouses is the most common approach for child-related matters especially in intervention (50%), compared to 37% in the comparison block. This suggests a more collaborative household environment in Namkhana. Additionally, in the comparison block, a greater proportion of

decisions are taken solely by husbands (25.9%), indicating a more male-dominated decision-making structure there. The influence of mothers-in-law or other elders remains significant in both blocks-32.1% in Namkhana and 27.8% in Patharpratima highlighting the traditional family dynamics that shape maternal and child health practices.

The low percentage of women, 7.5% in Namkhana and 7.9% in Patharpratima, who reported making independent decisions regarding maternal and child health highlights a significant gap in women's autonomy. This suggests that despite various health interventions and awareness programs, decision-making power remains largely concentrated with other family members, typically husbands or elders.

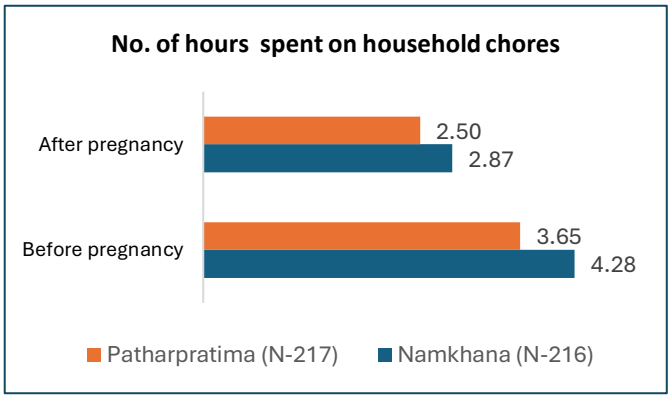
The current educational profile of mothers—where the majority have studied between c**lass 5 and Class 10**, represents a foundational but **limited level of literacy** that can influence independent decision-making in matters of maternal and child health.

Strengthening women's decision-making capacity must therefore be a core focus of community-based interventions and empowerment initiatives.



Additionally, **barriers to accessing healthcare services** such as long travel distances, lack of transport, poorly equipped health infrastructure, or socio-economic constraints—disproportionately affect women. These issues are further compounded by the **intensive workload and time burden** women carry at home, especially during the perinatal period. By embedding gender-sensitive approaches into the project, including efforts to mobilize community and family support systems, it becomes possible to reduce these burdens and enable more consistent health-seeking behavior.

The pregnant women were asked about the time they spent in doing household chores and amount of rest they could take during the pregnancy period. Both Namkhana and Patharpratima showed a significant decrease in the number of hours spent on household chores by the pregnant women post pregnancy. In Namkhana, the average time dropped from 4.28 hours before pregnancy to 2.87 hours after, while in Patharpratima, it reduced from 3.65 to 2.50 hours. This decline suggests that pregnant women in both blocks received household support during the perinatal period, potentially reflecting improved awareness or family involvement in reducing workload for expecting mothers.



During interaction with household members, instances of husband actively supported their wives during pregnancy, including helping with housework came to light. *"I helped her in cooking, I carried water, asked her to only cook and take rest." "During the pregnancy, I made sure my sister-in-law followed the doctor's advice. I took over cooking and household work so she wouldn't have to strain herself."*

Nonetheless, the qualitative discussions find that there still continues to be a need for targeted efforts to address gendered workload distribution, raise awareness among family members (especially male counterparts), and strengthen community-level support to enable rest and self-care for pregnant women.

Conclusion

Community engagement has emerged as a cornerstone for improving maternal and child health outcomes in the Sundarbans. The experience with SHGs and women's collectives illustrates that when communities—especially women—are empowered with knowledge, tools, and supportive structures, they can drive meaningful behavioural change. Their influence extends beyond individual households, creating ripple effects of awareness and care across the region.

Equally important is the gradual but evident shift in gender roles, with increasing male and family involvement contributing to better support for women during the perinatal period. However, the limited decision-making power of women remains a key concern. Addressing this gap through continued education, gender sensitization, and systems-level interventions is critical.

The chapter ultimately reinforces that sustainable health interventions must go beyond service delivery to cultivate community-led accountability, support, and ownership. By embedding equity, participation, and gender responsiveness at the core, such initiatives can not only improve health outcomes but also reshape social norms for long-term well-being.

Chapter 6: Recommendations

This chapter presents the way forward based on the findings of the endline evaluation. The recommendations are designed to strengthen the project's key intervention areas and address identified gaps. They focus on enhancing the sustainability, effectiveness, and scalability of project outcomes, while also suggesting opportunities for further improvement and adaptive management.

1. **Capacity Building and Health System Strengthening**
    - Design modular, periodic refresher training for frontline health workers (ANMs, CHOs, ASHAs) focusing on critical topics such as:
        - High-Risk Pregnancy (HRP) detection and management.
        - Anaemia and infection management.
        - Updated antenatal/postnatal protocols.
    - Considering Hypothyroidism is quite prevalent at present among the pregnant women, hence special training on detection of Hypothyroidism is recommended.
    - Shorter, focused sessions for health workers—delivered periodically—would enhance retention without causing fatigue. Additionally, incorporating mobile-friendly digital modules can provide flexible, on-demand learning opportunities to reinforce key topics like high-risk pregnancy signs, newborn care, and community counselling techniques.

2. **Emphasizing early registration of pregnancy**

Given that 57.9% of women reported not realizing they had missed their period, acted as a key barrier to early pregnancy registration, Tdh should prioritize the integration of targeted reproductive health education into its community health programming, with a specific focus on menstrual health literacy and early pregnancy symptom recognition. The intervention may include

- **Community-level awareness sessions** on how to recognize early signs of pregnancy, including missed periods, fatigue, and nausea, tailored for women and adolescent girls.
- **Training for ASHAs and frontline workers** to deliver simple, culturally appropriate messaging on menstrual tracking and reproductive health, using visual tools and relatable examples.
- **Inclusion of husbands and family members** in awareness campaigns to reduce stigma and build supportive environments for early disclosure of pregnancy.
- **Distribution of menstrual tracking calendars or mobile reminders** to help women monitor cycles and identify missed periods more easily.

3. **High-Risk Pregnancy identification and referral**

- **Scale awareness on danger signs which are less prevalent:** Focus on under-identified conditions like multiple pregnancies, previous LSCS, and history of adverse outcomes through targeted messaging and visual aids.
- During discussions with the ANMs and ASHAs they shared that a noticeable rise in cases of hypothyroidism in recent times as a danger sign of high-risk pregnancy. During the evaluation,

ASHAs and BMOH constantly discussed the increased incidence of hypothyroidism but there is a lack of data to concretise this. Therefore, Tdh can focus on a dedicated study on this.

- **Strengthen HRP counselling during home visits:** Use contextual, visual tools to guide families in understanding HRP risks and benefits of institutional care.
- **Ensure consistent HRP counselling:** Promote home-based HRP management techniques alongside institutional referrals for better maternal outcomes.
- Future efforts should focus more on **improving quality and completion of ANC components**, not just coverage of visits.

4. **Digital Innovations and IEC modification**
   - **Redesign Matri Sakhi app for usability:** Include icons, emojis, and voice prompts to make it friendly for semi-literate users. Add offline access to ensure reliability in low-connectivity areas.
   - **Diversify IEC formats:** Replace text-heavy materials with visuals, audio content, and context-based storytelling. Ensure materials are customized for tribal and remote populations.
   - **Gamify learning in group settings**: Expand use of Ludo-style games and flash cards in SHG and community meetings to increase engagement, especially among low-literacy populations.

5. **Gender mainstreaming and family involvement**
   - Develop male engagement modules: Integrate husband-focused sessions into ANC days, SHG meetings, and home visits.
   - Train ASHAs to facilitate couple counselling sessions on topics like breastfeeding, birth spacing, and newborn care.

6. **Key BCC activities to aid the service of health workers**
   - **Peer testimonials** from beneficiaries who followed advice and saw positive outcomes.
   - **Visual aids (flip charts/posters)** illustrating consequences of non-adherence and benefits of compliance.
   - **Reminders via mobile messaging (IVRS/SMS)** on medicine intake schedules and hydration.
   - **Mass media campaigns (radio/TV/folk media)** highlighting the risks of outdated practices.
   - **Use of positive deviants** (community members who adopt correct practices) as champions.

Annexure 1

Log frame indicator value for Namkhana- Baseline Vs. Endline

S.No	Log Frame Indicators	Definitions	Baseline	Endline
1	% of new-borns with low birth weight	(number of children within age within 2 years and birth weight<2500 gm.)/ (number of children of age within 2 years)	22%	17%
2	% of high-risk pregnant women sought treatment	(Number of high-risk mother sought treatment)/ (Total number of high-risk mother)	77%	99%
3	% of high-risk pregnant women (those sought treatment) accessing service from Government health facilities	(women with high-risk pregnancy have accessed service at govt facility)/ (women with high-risk pregnancy)	39%	80%
4	% of low-birth-weight new-borns receiving HBNC as per recommended standards	(children with lbw and 7 or more home visits within 42 days)/ (children with low birth weight)	45%	12%*
5	% of pregnant women who attended at least 4 times ANC during pregnancy	(number of women received four ANC visits in minimum)/ (number of live births by women during that period)	88%	91%
6	% of women who had full ANC (at least 4 visits, 2 TT and 180 IFA consumption)	(number of women received four ANC visits in minimum, tetanus toxic injection and consumption of iron folic acid tablets or syrups for at least 100 days)/ (number of live births by women during that period)	77%	67%
7	% of women who received postnatal care within 48 hours of childbirth regardless of place of delivery	(No of women who received PNC within 48 hours of delivery)/ (number of deliveries)	95%	92%
8	% of new-borns who received postnatal care within 48 hours of childbirth regardless of place of delivery	(No of newborn who received PNC within 48 hours of birth)/ (number of births)	96%	97%
9	Proportion of antenatal women going for institutional delivery	(number of institutional deliveries)/ (number of deliveries)	95%	99%

*Note: Although the endline study indicated a decline in the percentage of LBW infants receiving the full HBNC package, this finding may be influenced by recall bias. Notably, 82.9% of mothers could accurately describe the KMC process and credited ASHAs as their source of learning, suggesting effective knowledge transfer despite potential gaps in reported HBNC coverage

Additional Indicators for Namkhana- Baseline Vs. Endline

S.N	Indicators/ Information Areas	Baseline	Endline
1	% of high-risk mother/pregnant women	46%	76%
2	Average gravida of mothers/pregnant women	1.8	1.8
3	% of young mother/pregnant women were pregnant at least 3 times or more	20%	22%
4	Average parity[5] of mothers	1.6	1.1
5	% of young mother having more than 4 children	2%	0.5%
6	Average age at first pregnancy	20 years	20 years
Childcare			
7	% of children were breastfed within 1 hour of birth	81%	71%
8	% of LBW	22%	17%
9	% of mothers practicing kangaroo care	68% (of 22% LBW cases)	74% (of 17% LBW cases)
10	% of children suffered from diarrhoea	4%	5%
Pregnancy care			
11	% of mothers/pregnant women received the first ANC within 12 weeks	88%	75%

[5] https://www.datadictionary.wales.nhs.uk/index.html#!WordDocuments/parity.htm

S.N	Indicators/ Information Areas	Baseline	Endline
12	% of mothers received referral transport facility for institutional delivery	67%	89%
13	Skilled attendance at birth	95%	99%
Post-natal care			
14	% of mothers suffered from any postdelivery complication	14%	29%