

1 **Supplementary File**2
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4**Supplementary Table 1: Meeting plan**

Meeting number	Phase	Content
1	Phase I: Identifying and prioritising problems	Introduction to participatory learning and action
2		Understanding social inequities through a 'power walk' game
3		Identifying common health problems in the community
4		Prioritising common health problems in the community
5	Phase II: Planning strategies	Understanding causes and discussing solutions for prioritized problems
6		Exploring and choosing appropriate strategies
7		Taking responsibilities for the implementation of strategies
8	<i>First community meeting</i>	
9	Phase III: Implementing Strategies	Improving the nutritional status of women
10		Complications during pregnancy and delivery
11		Planning for safe birth
12		Responding to complications in the newborn
13		Importance of postnatal care for mothers
14		Exclusive breastfeeding practices
15		Management of high-risk babies
16		Identification and responding to neonatal infection
17		The intergeneration cycle of undernutrition
18		Complementary feeding
19		Management of diarrhoea

20		Management of worm infestation
21		Management of Acute respiratory illness (ARI)
22		Prevention and Management of Malaria
23		Delaying early/adolescent pregnancy
24		Access to safe abortion
25		Prevention and Management of RTI/STD and HIV/AIDS
26		Prevention and Management of Tuberculosis
27		Plan for a large community meeting
28	Second community meeting	
29	Emerging Issue - Addressing Gender Based Violence	Understanding Gender and Sex
30		Understanding the impact of power imbalance
31		Understanding the cycle of violence at different stages of women's life
32		Understanding Violence against women
33		Understanding forms of domestic violence and causes of remarriage
34		Preventing trafficking of children
35		Preventing early marriages and early pregnancies
36		Referrals for cases of violence
37		Community meeting

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13 **Supplementary Table 2:** Births, deaths and mortality rates among the most deprived, by arm

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	BASELINE PERIOD			EVALUATION PERIOD		
	Delayed arm	Early arm	All	Delayed arm	Early arm	All
Births, N	1943	1463	3406	7283	5431	12714
Live births, N	1878	1436	3314	7107	5318	12425
Stillbirths, N	64	25	89	175	112	287
Neonatal deaths (0-28 days), N	98	74	172	353	198	551
Early neonatal deaths (0-6 days), N	74	52	126	273	126	399
Late neonatal deaths (7-28 days), N	24	22	46	80	72	152
Perinatal deaths, N	138	77	215	448	238	686
Maternal deaths, N	0	0	0	0	0	0
Undetermined infant deaths, N*	1	2	3	1	1	2
Stillbirth rate per 1000 births	32.9	17.1	26.1	24.0	20.6	22.6
Neonatal mortality rate per 1000 live births	52.2	51.5	51.9	49.7	37.2	44.3
Early neonatal mortality rate per 1000 live births	39.4	36.2	38.0	38.4	23.7	32.1
Late neonatal mortality rate per 1000 live births	12.8	15.3	13.9	11.3	13.5	12.2
Perinatal mortality rate per 1000 births	71.0	52.6	63.1	61.5	43.8	54.0

15 * These deaths were either: (a) recorded as stillbirths but with the infant breathing or crying after birth, or (b) as neonatal deaths but with no breathing or crying. We sought to minimize the risk of misclassification by reporting these deaths as
16 'undetermined, and conducted sensitivity analyses to examine the effect of classifying them as stillbirths or neonatal deaths.
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21 **Supplementary Table 2:** Effects on birth outcomes among the most deprived (cluster-level analyses)

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	Minimally adjusted OR (95% CI) ¹	Fully adjusted OR (95% CI) ²
Neonatal mortality rate per 1000 live births	0.73 (0.56-0.94)	0.74 (0.57-0.95)
Early neonatal mortality rate per 1000 live births	0.61 (0.37-1.01)	0.62 (0.40-0.98)
Late neonatal mortality rate per 1000 live births	0.95 (0.08-11.5)	1.05 (0.11-10.0)
Perinatal mortality rate per 1000 births	0.87 (0.71-1.06)	0.88 (0.76-1.02)
Stillbirth rate per 1000 births	1.02 (0.23-4.49)	0.99 (0.26-3.72)

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¹ Adjusted for baseline differences in the outcome only.

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² Adjusted for baseline differences in the outcome and tribal/caste status.

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Supplementary Table 4: Preventive and care-seeking practices among the most deprived, by arm

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	BASELINE PERIOD		EVALUATION PERIOD		Model 1 ¹	Model 2 ²	Model 3 ³
	Delayed arm	Early arm	Delayed arm	Early arm			
Home births, N	1157	691	4516	2711			
Birth attendant used clean delivery kit, n (%)	314 (29.6)	336 (51.2)	653 (14.7)	1334 (51.3)	1.10 (0.09-13.7)	8.08 (0.34-189.7)	1.05 (0.08-14.3)
Live born infants (home births), N	1121	680	4429	2657			
Infant wiped within thirty minutes of birth, n (%)	682 (61.3)	515 (75.8)	3066 (69.5)	2308 (86.9)	1.54 (0.98-2.41)	1.98 (0.46-8.62)	1.57 (1.02-2.42)
Infant wrapped within thirty minutes of birth, n (%)	499 (44.8)	332 (48.9)	2299 (52.1)	1670 (62.9)	1.58 (0.44-5.67)	1.66 (0.63-4.34)	1.67 (0.47-5.95)
Infant not bathed in the first 24 hours of life, n (%)	726 (64.8)	478 (70.3)	2923 (66.1)	1924 (72.4)	2.01 (0.33-12.1)	1.77 (0.05-63.2)	1.81 (0.28-11.5)
Infant put to breast within one hour, n (%)	623 (55.8)	255 (37.5)	2291 (51.9)	1147 (43.2)	1.18 (0.73-1.90)	0.86 (0.21-3.52)	1.15 (0.70-1.89)
Infants alive at 6 weeks (all live births)	1777	1357	6727	5088			
Infant exclusively breastfed for first 6 weeks, n (%)	1233 (69.4)	1131 (83.4)	3405 (50.6)	4261 (83.7)	5.33 (0.98-28.8)	4.39 (1.54-12.5)	4.93 (0.87-27.9)
Mothers, N	1922	1448	7208	5363			
3+ antenatal check-ups by a skilled provider ⁴ , n (%)	447 (23.3)	627 (43.3)	1027 (14.2)	2950 (55.0)	3.90 (0.74-20.6)	5.30 (2.71-10.3)	4.06 (0.73-22.5)
Mothers who made plans for birth in pregnancy ⁵ , n (%)	478 (24.9)	714 (49.3)	1427 (19.8)	3090 (57.6)	0.46 (0.10-2.05)	2.43 (0.22-26.9)	0.47 (0.10-2.26)
Mothers who had a health problem in pregnancy, n (%)	1651 (86.0)	948 (65.5)	5301 (73.6)	3060 (57.1)	1.18 (0.69-2.02)	0.75 (0.20-2.81)	1.22 (0.74-2.01)
Mothers who sought care for a health problem in pregnancy, n (%)	522 (31.6)	378 (39.9)	1768 (33.4)	1309 (42.8)	0.85 (0.36-2.05)	1.06 (0.26-4.30)	0.91 (0.34-2.41)
Institutional delivery, n (%)	763 (39.7)	736 (50.8)	2652 (36.8)	2626 (49.0)	0.90 (0.52-1.53)	1.54 (0.60-3.99)	0.94 (0.51-1.72)
Birth attended by a skilled provider ⁴ , n (% of all births)	762 (39.6)	747 (51.6)	2740 (38.0)	2720 (50.7)	0.89 (0.47-1.68)	1.57 (0.57-4.34)	0.91 (0.47-1.79)
Visited by ASHA 3 times in 1 st week after birth, n (%)	1110 (58.2)	1042 (72.0)	3991 (55.4)	3827 (71.4)	1.38 (1.04-1.82)	1.71 (0.97-3.00)	1.37 (1.04-1.79)
Received a postpartum check from skilled provider ⁴ , n (%)	362 (18.8)	346 (24.0)	1094 (15.2)	983 (18.3)	0.86 (0.26-2.83)	0.92 (0.30-2.88)	0.88 (0.26-2.96)
Livebirths, N	1878	1436	7107	5318			
Newborn health problem, n (%)	785 (42.0)	487 (34.0)	3017 (42.5)	1618 (30.5)	0.74 (0.40-1.34)	0.64 (0.33-1.24)	0.74 (0.40-1.34)
Care-seeking for a newborn health problem ⁶ , n (%)	387 (49.3)	351 (72.1)	1494 (49.5)	1022 (63.2)	0.93 (0.05-18.1)	1.73 (0.37-7.97)	0.85 (0.03-23.7)

1. Model 1: Cluster-level analysis adjusted for baseline differences in the outcome only.
2. Model 2: Cluster-level analysis adjusted for tribal/caste status only
3. Model 3: Cluster-level analysis adjusted for baseline differences in the outcome and tribal/caste status (main analysis).
4. Doctor or ANM /Nurse
- 5 Transport, location, money, birth attendant
6. cough or fever >24 hours or diarrhoea ≥3x per day



56 **Supplementary Table 5:** monitoring data on meetings conducted, by district (compiled in July 2020)

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District n	District name	Groups that completed meeting 1 (n1)	Groups that completed Meeting 16 (n2)	% groups completing meeting 16 (n2/n1*100)	Neonatal mortality rate per 1000 livebirths (2005-2015) *
1	Bokaro	1196	0 (delayed arm district)	0.00	26.9
2	Chatra	1583	1530	96.6	52.3
3	Deoghar	2461	2010	81.7	41.2
4	Dhanbad	1682	1267	75.3	39.5
5	Dumka	1366	0 (delayed arm district)	0.00	35.0
6	East Singhbhum	2114	1751	82.8	9.0
7	Garhwa	1301	1238	95.2	41.0
8	Giridih	2569	2043	79.5	40.1
9	Godda	1831	1585	86.6	46.7
10	Gumla	1621	1122	69.2	29.2
11	Hazaribagh	2398	2071	86.4	35.6
12	Jamtara	1664	1445	86.8	36.1
13	Khunti	852	688	80.7	18.3
14	Koderma	728	625	85.8	28.0
15	Latehar	1204	952	79.1	20.5
16	Lohardaga	477	409	85.7	25.0
17	Pakur	1184	867	73.2	28.4
18	Palamu	1722	0 (delayed arm district)	0.00	36.6
19	Ramgarh	1219	1060	87.0	27.1
20	Ranchi	2399	2072	86.4	33.8
21	Sahibganj	1532	1189	77.6	31.0
22	Saraikela Karsawan	1675	1445	86.3	31.8
23	Simdega	762	651	85.4	50.4
24	West Singhbhum	2004	1638	81.7	36.4

* Data from NFHS-4.

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60 Our ability to extrapolate results from the evaluation districts to other rural areas of Jharkhand also rests on the comparability of these areas. In the table below,
 61 we compared National Family Health Survey 2015-4 household, women-level, maternity care-seeking data from the three early evaluation districts, the three
 62 delayed evaluation districts, and other rural districts not included in the evaluation.

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67**Supplementary Table 6:**

Comparison of household characteristics, women-level characteristics, maternity care-seeking and neonatal mortality in evaluation and scale up areas

	% Households covered by health scheme or insurance	% Women who are literate	% Women with 10 + years of schooling	% Mothers who had at least 4 antenatal care visits	% Institutional births	% Mothers who received postnatal care from a health professional within 2 days of delivery	Neonatal mortality rate per 1000 live births
Early intervention districts (n=3)	4.4	53.8	22.7	26.4	56.0	35.2	29.5
Delayed intervention districts (n=3)	14.0	51.5	19.2	23.9	51.9	35.8	32.8
Districts not included in evaluation, with adequate intervention coverage (n=17)*	14.9	51.8	20.4	25.8	60.1	42.4	33.0
Jharkhand, rural areas in all 24 districts	13.2	51.5	20.2	24.8	57.3	40.9	33.8

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* All districts except Chatra, which did not reach our intervention coverage criteria.

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Chatra had an estimated NMR of 64 per 1000 livebirths in the 10 years preceding the NFHS-4 survey.

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This comparison suggests that, although access to a health scheme or insurance was unequal between areas, the proportion of women who were literate, had 10 or more years of schooling, had at least four antenatal care visits, an institutional birth and a postnatal care check-up within two days of delivery were within a range of 10% between early and delayed districts, as well as between evaluation districts and other districts. Neonatal mortality rates were broadly similar across areas.

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To estimate the number of neonatal lives saved by the intervention, we calculated the expected number of births over two years in rural areas of the 20 districts and expected neonatal deaths. We then calculated the number of neonatal deaths averted by converting the odds ratio from our main model to a risk ratio and applying it to the number of expected neonatal deaths.

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81 **Supplementary Table 7:** estimated number of newborn lives saved by the intervention at scale

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	2016	2017	2018	2019	2020	TOTAL
Rural population covered by the intervention in 20 districts meeting coverage criteria	664,821	7,734,318	23,254,877	23,752,532	24,260,836	
Estimated Crude Birth Rate in rural population	20.0	20.0	20.0	20.0	20.0	
Total number of livebirths	13,296	154,686	465,098	475,051	485,217	
Neonatal mortality in rural areas with no intervention	0.035	0.034	0.033	0.032	0.031	
Number of neonatal deaths without the intervention	465	5,259	15,348	15,202	15,042	
Risk Ratio for neonatal mortality (actual lower bound of confidence interval)	0.60	0.60	0.60	0.60	0.60	
Risk Ratio for neonatal mortality (actual estimate)	0.77	0.77	0.77	0.77	0.77	
Risk Ratio for neonatal mortality (actual higher bound of confidence interval)	0.98	0.98	0.98	0.98	0.98	
N of neonatal deaths with the intervention (lower bound of CI from evaluation)	279	3,156	9,209	9,121	9,025	
N of neonatal deaths with the intervention (estimate from evaluation)	358	4,050	11,818	11,705	11,582	
N of neonatal deaths with the intervention (upper bound of CI from evaluation)	456	5,154	15,041	14,898	14,741	
Total number of newborn lives saved - upper bound	186	2,104	6,139	6,081	6,017	20,527
Total number of newborn lives saved	107	1,210	3,530	3,496	3,460	11,803
Total number of newborn lives saved - lower bound	9	105	307	304	301	1,026

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