Table 1: Services offered by Integrated Child Development Scheme (ICDS) to children

ICDS services	Age group	Components
Supplementary Nutrition[#]	6 months – 3 years	Take home rations
	3-6 years	Cooked meals
Health Investment	0-3 years	Vaccination[##] Growth monitoring### Health check up Nutrition education to mothers
	3-6 years####	Growth monitoring Health check up Nutrition education to mothers

Source: Constructed by authors

Notes: # - Supplementary nutrition refers to the food provided at the ICDS center to its beneficiaries

- Vaccination –Six vaccines for DPT, polio and measles are provided through ICDS center.

- As part of growth monitoring, ICDS workers track the weight of children to ensure that they are not lagging behind.

- In addition, children in this age group are also offered pre-school education.

Table 2: Estimated impact of ICDS participation on Weight-for-age (WAZ) and Height-for-age (HAZ) z-scores by other studies

Studies	Data Source	Age group	WAZ			HAZ		
			All	Girls	Boys	All	Girls	Boys
Impact of ICDS participation on z scores (at mean)								
Lokshin et al (2005)	NFHS I	0-4 years	-0.04 (0.04)	0.00 (0.06)	0.01 (0.05)	0.06 (0.06)	0.01 (0.08)	0.15** (0.08)
	NFHS II	0-3 years	0.00 (0.05)	-0.13 (0.09)	0.04 (0.07)	0.02 (0.06)	-0.06 (0.10)	0.10 (0.07)
Kandpal (2011)[#]	NFHS I	0-4 years				0.03 (0.06)	0.09 (0.08)	0.14** (0.08)
	NFHS II	0-3 years				0.03 (0.03)	0.05 (0.04)	0.01 (0.04)
	NFHS III	0-2 years				0.06** (0.04)	0.04 (0.05)	0.09** (0.05)
	NFHS III	0-3 years				0.08*** (0.03)	0.07 (0.04)	0.08** (0.04)
	NFHS III	0-5 years				0.09*** (0.03)	0.10 (0.04)	0.07 (0.04)
Jain (2015)[##]	NFHS III	0-2 years		0.15 (0.09)	0.20** (0.10)		0.44*** (0.17)	0.41** (0.20)
Impact of ICDS participation on z-scores of moderately and severely stunted children								
Moderately stunted								
Kandpal (2011)[#]	NFHS I	0-4 years				0.01 (0.02)	0.04 (0.03)	0.02 (0.03)
	NFHS II	0-3 years				0.01 (0.01)	0.00 (0.01)	0.03*** (0.01)
	NFHS III	0-5 years				0.02*** (0.01)	0.03** (0.02)	0.00*** (0.01)
Severely stunted								
Kandpal (2011)[#]	NFHS I	0-4 years				0.06 (0.05)	0.00 (0.07)	0.22*** (0.06)
	NFHS II	0-3 years				0.01 (0.03)	0.00 (0.03)	0.00 (0.03)
	NFHS III	0-5 years				0.04 (0.03)	0.08	0.01*** (0.04)

Source: Jain, Monica. "India's Struggle Against Malnutrition—Is the ICDS Program the Answer?." World Development 67 (2015): 72-89; Kandpal, Eeshani. "Beyond average treatment effects: distribution of child nutrition outcomes and program placement in India's ICDS." World Development 39, no. 8 (2011): 1410-1421 and Lokshin, Michael, Monica Das Gupta, Michele Gragnolati, and Oleksiy Ivaschenko. "Improving child nutrition? The integrated child development services in India." Development and Change 36, no. 4 (2005): 613-640.
Notes: # - Kandpal (2011) did not analyse the impact of ICDS availability on WAZ scores.
- Jain estimates impact of utilizing only supplementary food service.
Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Table 3: Summary statistics on availability and utilization

Variable	Mean	Standard Error
Center level availability (% of households with access to)		
None of the services	0	
Only nutrition and not investment service	1	0.01
Only investment and not nutrition service	0	
Both nutrition and investment services	99	0.01
Number of households	283	
Household perceived availability (% of households with access to)		
None of the services	9	1.72
Only nutrition and not investment service	11	1.88
Only investment and not nutrition service	9	1.66
Both nutrition and investment services	71	2.70
Number of households	283	
Utilization of ICDS (%of households utilizing)		
None of the services	41	4.86
Only nutrition service	18	4.31
Only investment service	19	3.34
Both services	22	2.93
Number of households	283	

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Table 4: Comparing households that perceive availability of all services with households that believe no or limited availability of ICDS services

Variable	Full availability	No/limited availability	Difference
Percentage of total sample	71.02	28.98	
Distance to ICDS center	441.06	232.99	208.07***
(meters)	(56.30)	(46.90)	(73.12)
Mother's age (years)	27.73	30.53	-2.80**
	(0.61)	(1.19)	(1.33)
Caste-General (%)	12.51	9.59	2.98
	(2.64)	(3.74)	(4.58)
Caste-SC (%)	18.32	51.21	-32.89***
	(4.13)	(9.00)	(9.90)
Caste-ST (%)	22.84	9.81	13.03**
	(4.19)	(3.04)	(5.18)
Caste-OBC (%)	46.32	29.45	16.87*
	(4.85)	(7.85)	(9.23)
Land less household (%)	48.39	65.57	-17.18**
	(4.96)	(6.98)	(8.56)
Marginal land holding (%)	18.95	14.33	4.62
	(3.05)	(4.33)	(5.30)
Medium land holding (%)	16.19	8.85	7.34
	(2.67)	(2.63)	(3.75)
Large land holding (%)	16.46	11.24	5.22
	(2.66)	(3.31)	(4.25)
Bihar (%)	38.09	82.19	-44.09***
	(4.98)	(4.43)	(6.67)
Jharkhand (%)	35.89	10.68	25.21***
	(4.54)	(3.16)	(5.53)
Orissa (%)	26.01	7.13	18.88***
	(3.94)	(2.66)	(4.76)
Number of households	201	82	

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Differences in mean was insignificant for age of the child, sex, birth order, morbidity, whether utilized ICDS in past three months, mother's working status, father's age, parents' education and assets owned.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Table 5: Summary statistics for the sample, and by ICDS participation

Variable	Full sample	ICDS participants	Non participants	Difference
Weight (kg)	11.34	11.30	11.40	-0.10
	(0.25)	(0.33)	(0.40)	(0.51)
Weight-for-age z scores	-1.97	-1.83	-2.16	0.33
	(0.10)	(0.14)	(0.16)	(0.21)
Underweight (%)	51.16	44.44	60.33	15.89
	(4.91)	(5.48)	(7.94)	(9.65)
Height (cm)	89.79	89.05	90.80	-1.75
	(1.12)	(1.50)	(1.72)	(2.28)
Height-for-age z scores	-1.85	-1.91	-1.78	-0.13
	(0.15)	(0.18)	(0.26)	(0.32)
Stunted (%)	48.31	52.70	42.28	10.42
	(5.32)	(6.57)	(8.74)	(10.93)
Age of the child (months)	39.00	37.73	40.78	-3.05
	(1.58)	(2.10)	(2.49)	(3.25)
Male (%)	45.70	43.28	49.10	-5.82
	(4.71)	(5.39)	(8.25)	(9.83)
Distance to ICDS center (meters)	352.16	213.57	546.85	-333.28***
	(40.32)	(27.94)	(86.16)	(90.28)
Same caste as ICDS worker (%)	58.02	68.55	43.22	25.34***
	(4.76)	(4.71)	(7.88)	(9.16)
Mother's age (years)	28.93	28.71	29.22	-0.51
	(0.67)	(0.77)	(1.17)	(1.40)
Mother's education (years)	3.63	4.05	3.05	1.00
	(0.41)	(0.53)	(0.59)	(0.79)
Mother's height (cm)	150.38	150.87	149.68	1.19
	(0.53)	(0.54)	(0.98)	(1.12)
Working mother (%)	14.69	6.22	26.58	-20.36**
	(4.42)	(2.20)	(9.09)	(9.32)
Father's age (years)	33.34	33.23	33.49	-0.26
	(0.68)	(0.79)	(1.22)	(1.44)
Father's education (years)	6.33	6.30	6.39	-0.09
	(0.45)	(0.52)	(0.82)	(0.96)
Number of children in house	2.41	2.43	2.39	0.04
	(0.07)	(0.09)	(0.11)	(0.14)
Asset owned#	0.80	0.78	0.83	-0.05
	(0.06)	(0.07)	(0.12)	(0.14)
Caste-General (%)	11.24	10.58	12.16	-1.58
	(2.22)	(2.66)	(3.87)	(4.68)
Caste-SC (%)	32.37	26.12	41.16	-15.03
	(5.18)	(5.66)	(8.91)	(10.53)
Caste-ST (%)	17.28	23.26	8.86	14.40***
	(2.94)	(4.40)	(2.83)	(5.22)
Caste-OBC (%)	39.11	40.03	37.82	2.21
	(4.50)	(5.62)	(7.35)	(9.22)
Bihar (%)	56.93	37.32	84.48	-47.17***
	(4.42)	(6.27)	(3.87)	(7.35)
Jharkhand (%)	25.12	35.96	9.89	26.07***
	(3.37)	(5.01)	(2.95)	(5.81)
Orissa (%)	17.95	26.72	5.62	21.10***
	(2.77)	(4.29)	(2.23)	(4.82)
Observations	283	188	95	

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: # - an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Table 6: Percentage of households utilizing ICDS, services by caste category (%)

% Households	Upper Caste	Schedule Caste (SC)	Schedule Tribe (ST)	Other Backward Caste (OBC)
None of the services	45	53	21	40
	(10)	(11)	(6)	(7)
Only nutrition and not investment service	7	25	10	19
	(4)	(9)	(4)	(7)
Only investment and not nutrition service	18	16	33	15
	(7)	(6)	(10)	(4)
Both nutrition and investment services	30	6	36	26
	(9)	(3)	(7)	(5)

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012
Standard error in parentheses

Table 7: Comparing observations with missing anthropometric data to rest of the sample

Variables	Child weight			Child height		
	Data available	Data missing	Difference	Data available	Data Missing	Difference
Percentage of total sample	95.76	4.24		85.16	14.84	
Age of the child (months)	38.71	47.89	-9.18	40.94	27.45	13.49***
	(1.62)	(6.24)	(6.20)	(1.71)	(3.26)	(3.65)
Male (%)	45.03	65.91	-20.88	43.43	59.17	-15.74
	(4.83)	(14.62)	(14.82)	(5.24)	(9.12)	(10.44)
Birth order#	2.56	2.53	0.03	2.61	2.20	0.41
	(0.12)	(0.31)	(0.32)	(0.12)	(0.27)	(0.29)
Morbidity (%)	47.64	68.33	-20.69	48.05	49.83	-1.78
	(4.86)	(13.84)	(14.13)	(5.32)	(9.24)	(10.58)
ICDS visit in past three months (%)	58.40	58.84	-0.44	57.83	61.86	-4.03
	(5.00)	(15.96)	(16.10)	(5.45)	(9.49)	(10.86)
Distance to ICDS center (meters)	353.29	318.23	35.06	342.13	411.78	-69.65
	(41.64)	(54.28)	(66.66)	(41.96)	(122.68)	(128.47)
Mother's age (years)	28.98	27.45	1.53	29.56	25.17	4.39***
	(0.69)	(0.81)	(1.03)	(0.72)	(1.06)	(1.27)
Mother's education (years)	3.53	6.83	-3.30*	3.21	6.17	-2.96***
	(0.42)	(1.95)	(1.91)	(0.44)	(0.99)	(1.07)
Working mother (%)	14.94	7.02	7.92	15.69	8.73	6.96
	(4.56)	(7.17)	(8.25)	(5.06)	(5.37)	(7.33)
Father's age (years)	33.41	31.12	2.29**	33.81	30.57	3.24**
	(0.70)	(0.85)	(1.07)	(0.75)	(1.11)	(1.33)
Father's education (years)	6.21	10.08	-3.87**	6.16	7.37	-1.21
	(0.46)	(1.61)	(1.61)	(0.50)	(0.87)	(1.00)
Asset owned##	0.75	2.33	-1.58***	0.76	1.05	-0.29
	(0.06)	(0.37)	(0.36)	(0.07)	(0.19)	(0.19)
Caste-General (%)	11.09	15.64	-4.55	11.65	8.80	2.85
	(2.28)	(9.50)	(9.39)	(2.53)	(3.61)	(4.38)
Caste-SC (%)	33.21	7.02	26.19***	34.62	19.05	15.57*
	(5.30)	(7.17)	(8.69)	(5.81)	(7.15)	(9.15)
Caste-ST (%)	17.71	4.30	13.41**	17.24	17.47	-0.23
	(3.04)	(4.52)	(5.29)	(3.23)	(6.88)	(7.53)
Caste-OBC (%)	37.99	73.04	-35.05***	36.49	54.68	-18.19*
	(4.59)	(12.45)	(12.79)	(4.94)	(9.08)	(10.25)
Land less household (%)	57.35	7.02	50.33***	56.41	51.71	4.70
	(4.41)	(7.17)	(8.17)	(4.88)	(9.13)	(10.27)
Marginal land holding (%)	15.98	47.13	-31.15*	17.06	16.50	0.56
	(2.56)	(16.49)	(16.03)	(2.86)	(6.15)	(6.72)
Medium land holding (%)	12.92	17.35	-4.43	12.23	17.97	-5.74
	(2.00)	(12.97)	(12.60)	(2.06)	(5.95)	(6.24)
Large land holding (%)	13.76	28.50	-14.74	14.30	13.82	0.48
	(2.15)	(13.60)	(13.22)	(2.35)	(5.24)	(5.69)
Bihar (%)	56.35	74.44	-18.09	58.97	44.82	14.15
	(4.57)	(13.02)	(13.30)	(4.82)	(9.41)	(10.49)
Jharkhand (%)	25.58	11.32	14.26	26.45	17.21	9.24
	(3.48)	(8.42)	(8.79)	(3.82)	(6.74)	(7.69)
Orissa (%)	18.07	14.24	3.83	14.58	37.96	-23.38***
	(2.85)	(10.69)	(10.64)	(2.78)	(8.47)	(8.83)
Number of observations	271	12		241	42	

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: # - Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Table 8: Multinomial logit model estimates for utilization of ICDS services conditional on household perception of availability (marginal effects)

Variables	Nutrition service	Investment service	Both services	None of the service
Percentage of total sample	13.65	22.89	36.55	26.91
Age (in months)	0.002***	-0.012***	0.004***	0.005***
	(0.000)	(0.001)	(0.001)	(0.001)
Male Dummy	-0.022***	-0.033***	0.002	0.053***
	(0.003)	(0.003)	(0.003)	(0.004)
Birth Order#	0.041***	-0.031***	0.008***	-0.018***
	(0.003)	(0.003)	(0.003)	-0.003
Distance to AWC ('00 meter)	-0.011***	-0.013***	-0.023***	0.048***
	(0.002)	(0.002)	(0.002)	(0.003)
Mother's age (years)	-0.035***	0.006***	-0.011***	0.040***
	(0.003)	(0.001)	(0.002)	(0.003)
Mother's education (years)	0.013***	-0.005***	-0.009***	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)
Dummy for working mother	0.024***	0.066***	0.046***	-0.136***
	(0.005)	(0.007)	(0.007)	(0.010)
Mother's height (cm)	-0.009***	0.000**	0.002***	0.006***
	(0.001)	(0.000)	(0.000)	(0.001)
Father's age (years)	0.028***	-0.002	0.019***	-0.045***
	(0.003)	(0.002)	(0.002)	(0.003)
Father's education (years)	-0.020***	-0.008***	0.007***	0.022***
	(0.002)	(0.001)	(0.001)	(0.002)
Assets owned##	0.039***	-0.065***	0.002	0.024***
	(0.003)	(0.005)	(0.005)	(0.004)
Number of children	0.053***	0.022***	0.012***	-0.087***
	(0.005)	(0.003)	(0.004)	(0.007)
Dummy for same caste as AWW	0.108***	-0.033***	-0.000	-0.074***
	(0.009)	(0.004)	(0.006)	(0.008)
SC	-0.046***	-0.091***	-0.171***	0.308***
	(0.013)	(0.014)	(0.017)	(0.023)
ST	0.019*	-0.202***	-0.108***	0.290***
	(0.011)	(0.020)	(0.019)	(0.023)
BC	-0.145***	-0.047***	0.046***	0.147***
	(0.013)	(0.005)	(0.007)	(0.012)
Jharkhand	-0.239***	0.121***	0.393***	-0.275***
	(0.023)	(0.021)	(0.032)	(0.029)
Orissa	-0.187***	-0.030***	0.323***	-0.106***
	(0.017)	(0.012)	(0.022)	(0.016)
Log likelihood	-4696.15			
Number of observations	249			

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012
Notes: # - Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children. ## – an index for number of assets owned constructed using PCA. Standard error in parentheses; ***, ** and * indicate significance at 1, 5 & 10 % respectively.

Table 9: Multinomial logit model estimates for utilization of ICDS services conditional on centre reported availability (marginal effects)– Change in the probability of utilizing a service for a unit change in the covariate

Variables	Nutrition service	Investment service	Both services	None of the service
Percentage of total sample	12.50	20.96	33.45	33.09
Age (in months)	-0.011***	0.002***	0.005***	0.004***
	(0.001)	(0.000)	(0.001)	(0.000)
Male Dummy	-0.018***	-0.052***	0.051***	0.019***
	(0.002)	(0.003)	(0.002)	(0.003)
Birth Order[#]	-0.037***	0.027***	0.060***	-0.050***
	(0.003)	(0.002)	(0.003)	(0.003)
Distance to AWC ('00 meters)	-0.011***	-0.007***	-0.015***	0.034***
	(0.000)	(0.000)	(0.001)	(0.001)
Mother's age (years)	0.012***	-0.005***	0.002***	-0.009***
	(0.001)	(0.000)	(0.001)	(0.001)
Mother's education (years)	-0.009***	0.006***	0.001*	0.002***
	(0.001)	(0.000)	(0.000)	(0.000)
Dummy for working mother	-0.022***	0.043***	-0.040***	0.018***
	(0.002)	(0.002)	(0.002)	(0.002)
Mother's height (cm)	-0.003***	-0.002***	0.003***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Father's age (years)	-0.010***	0.001***	-0.000	0.010***
	(0.001)	(0.000)	(0.000)	(0.000)
Father's education (years)	-0.003***	-0.015***	0.002***	0.016***
	(0.000)	(0.001)	(0.000)	(0.001)
Assets owned[##]	-0.051***	0.022***	0.025***	0.004**
	(0.004)	(0.001)	(0.002)	(0.002)
Number of children in household	0.013***	0.028***	-0.025***	-0.016***
	(0.001)	(0.002)	(0.001)	(0.001)
Dummy for same caste as AWW	-0.036***	0.088***	0.054***	-0.105***
	(0.003)	(0.006)	(0.004)	(0.005)
SC	-0.023***	0.039***	-0.194***	0.178***
	(0.005)	(0.004)	(0.010)	(0.008)
ST	-0.173***	0.100***	-0.164***	0.237***
	(0.013)	(0.007)	(0.013)	(0.012)
BC	-0.068***	-0.027***	0.038***	0.057***
	(0.005)	(0.002)	(0.003)	(0.003)
Jharkhand	0.077***	-0.261***	0.558***	-0.374***
	(0.015)	(0.016)	(0.028)	(0.023)
Orissa	-0.001	-0.097***	0.500***	-0.402***
	(0.012)	(0.009)	(0.024)	(0.019)
Log likelihood	-7897.43			
Number of observations	272			

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012
Notes: # - Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.
– an index for number of assets owned constructed using PCA.
Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Table 10: Results for tests conducted to evaluate matching quality between household not participating in ICDS program (control) and households utilizing at least one ICDS service (treatment)

Variables	Weight-for-age z-scores			Height-for-age z-scores		
	Difference in means before matching[†]	Difference in means after matching[†]	Reduction in bias	Difference in means before matching[†]	Difference in means after matching[†]	Reduction in bias
Age of the child (months)	-9.103***	2.335	74.3	-8.717***	-1.659	81.0
Male (dummy)	0.035	0.026	24.7	0.05	0.018	64.6
Birth order[#]	0.249	-0.340**	-36.6	0.266	-0.015	94.2
Morbidity (dummy)	0.185**	-0.047	74.6	0.183**	0.007	96.1
Size at birth[##]	-0.087	-0.110	-26.6	-0.109	-0.052	52.6
Distance to ICDS center (meters)	-436.650***	17.370	96.0	-421.890***	27.160	93.6
Same caste as ICDS worker (dummy)	0.205***	-0.051	75.1	0.184**	-0.051	72.1
Mother's age (years)	-0.054	-0.279	-408.9	-0.144	-0.081	43.9
Mother's education (years)	-0.601	-0.414	31.1	-1.039	-0.282	72.9
Working mother (dummy)	-0.027	0.031	-14.9	-0.009	-0.024	-166.2
Father's age (years)	0.827	-0.287	65.4	0.455	0.151	66.8
Father's education (years)	-2.100***	-1.144*	45.5	-2.321***	-0.638	72.5
Using clean fuel (dummy)	-0.100**	0.034	66	-0.127**	-0.021	83.2
Asset owned[###]	-0.566***	-0.120	78.8	-0.660***	-0.360**	45.5
Caste-SC (dummy)	-0.003	0.001	78.6	-0.001	-0.034	-3300.3
Caste-ST (dummy)	0.158**	-0.033	79.0	0.172**	0.006	96.3
Caste-OBC (dummy)	-0.029	0.028	3.5	-0.011	-0.046	-328.3
Land less household (dummy)	0.000	-0.051	-28346.4	0.028	0.016	43.2
Marginal land holding (dummy)	-0.072	-0.093	-29.2	-0.050	0.012	75.1
Medium land holding (dummy)	0.129**	0.137**	-6.8	0.102	0.021	79.4
Large land holding (dummy)	-0.056	0.007	88.3	-0.080	-0.050	38.3
Bihar (dummy)	-0.470***	-0.022	95.2	-0.438***	0.021	95.2
Jharkhand (dummy)	0.344***	-0.031	91.0	0.368***	0.005	98.7
Orissa (dummy)	0.126**	0.053	57.4	0.069	-0.026	63.0
Pseudo-R^2	0.489***	0.104		0.455***	0.130	
Number of observations	240			213		

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: † - Difference in mean = Mean of treatment group – Mean of control group

- Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– size at birth was measured using a 5 point hedonic scale, with 1 implying very large and 5 implying very small.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Table 11: Impact of ICDS participation on child height and weights, using different methods to estimate impact

Comparisons	Unmatched differences	Propensity Score Matching	Covariate Matching
	Impact of utilizing ICDS services on Weight-for-age z scores		
ICDS participation[#]	0.32	0.49***	0.47***
vs. not participating	(0.28)	(0.02)	(0.19)
Both services[###]	0.51*	0.52***	0.50***
vs. not participating	(0.31)	(0.03)	(0.17)
Either service[##]	0.17	0.15***	0.02
vs. not participating	(0.31)	(0.03)	(0.23)
Both services[###]	0.34	0.41***	0.75***
vs. either service[##]	(0.26)	(0.04)	(0.24)
	Impact of utilizing ICDS services on Height-for-age z scores		
ICDS participation[#]	-0.17	0.34***	-0.46
vs. not participating	(0.50)	(0.03)	(0.39)
Both services[###]	0.08	0.43***	0.55
vs. not participating	(0.52)	(0.04)	(0.47)
Either service[##]	-0.38	0.27***	0.08
vs. not participating	(0.56)	(0.04)	(0.39)
Both services[###]	0.46	0.34***	0.29
vs. either service[##]	(0.40)	(0.05)	(0.30)

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012
Notes: # - ICDS participation implies utilizing at least one or both ICDS services
– Either service implies utilizing either nutrition or investment service
- Both services implies utilizing both nutrition and investment services
Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Tables

Table A.1: Probit regression for data with missing anthropometric information (marginal effects)

Variables	Missing weight data	Missing height data
Percentage of total sample	4.24	16.61
Age of the child (months)	0.0012***	-0.0027*
	(0.0003)	(0.0015)
Dummy for Male	0.0001	0.0955*
	(0.0040)	(0.0509)
Birth order#	0.0184***	0.0337***
	(0.0050)	(0.0103)
Dummy for Morbidity	0.0109*	-0.0794*
	(0.0064)	(0.0433)
Dummy for ICDS visit in past three months	0.0171	-0.0525
	(0.0205)	(0.0395)
Mother's age (years)	0.0047	-0.0274***
	(0.0042)	(0.0049)
Mother's education (years)	0.0027**	0.0146
	(0.0013)	(0.0090)
Dummy for Working mother	0.0246*	0.0043
	(0.0130)	(0.0732)
Father's age (years)	-0.0070*	0.0140***
	(0.0041)	(0.0035)
Father's education (years)	0.0009	-0.0053
	(0.0030)	(0.0046)
Asset owned##	0.0172***	0.0493
	(0.0046)	(0.0368)
Caste-General	-0.0102	-0.0701
	(0.0409)	(0.0872)
Caste-OBC	0.0194**	0.0234
	(0.0090)	(0.0648)
Marginal land holding	0.0555**	-0.0669
	(0.0259)	(0.0578)
Medium land holding	0.0279	-0.0266
	(0.0473)	(0.0911)
Large land holding	0.0348	-0.1479
	(0.0330)	(0.1269)
Jharkhand	-0.0087	-0.0108
	(0.0358)	(0.0768)
Orissa	0.0049	0.1086***
	(0.0184)	(0.0380)
Number of children	283	283

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: # - Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.2: Summary statistics for the sample, and by ICDS participation

Variable	Full sample	ICDS participants	Non participants	Difference
Age of the child (months)	39.00	37.73	40.78	-3.05
	(1.58)	(2.10)	(2.49)	(3.25)
Male (%)	45.70	43.28	49.10	-5.82
	(4.71)	(5.39)	(8.25)	(9.83)
Birth order[#]	2.56	2.62	2.46	0.16
	(0.11)	(0.13)	(0.21)	(0.24)
Size at birth[##]	2.99	2.96	3.04	-0.08
	(0.03)	(0.04)	(0.06)	(0.07)
Morbidity (%)	48.30	52.12	42.94	9.18
	(4.75)	(5.80)	(8.11)	(9.94)
Dietary Diversity score[###]	11.13	11.54	10.56	0.98
	(0.44)	(0.61)	(0.61)	(0.86)
Number of vaccinations Received	7.30	7.65	6.82	0.83*
	(0.22)	(0.27)	(0.39)	(0.47)
Household size	7.60	7.68	7.48	0.20
	(0.21)	(0.28)	(0.31)	(0.42)
Access to clean drinking water (%)	90.70	85.19	98.44	-13.24***
	(1.95)	(3.19)	(0.99)	(3.34)
Using clean fuel (%)	8.05	7.19	9.26	-2.07
	(1.55)	(1.91)	(2.64)	(3.25)
Defecating in open (%)	15.02	14.67	15.52	-0.86
	(3.50)	(5.32)	(3.97)	(6.62)
Land less household (%)	55.73	52.94	59.65	-6.71
	(4.41)	(5.51)	(7.10)	(8.97)
Marginal land holding (%)	16.98	17.62	16.08	1.54
	(2.59)	(3.34)	(4.10)	(5.28)
Medium land holding (%)	13.06	15.94	9.01	6.92*
	(1.99)	(2.77)	(2.69)	(3.85)
Large land holding (%)	14.23	13.50	15.26	-1.76
	(2.14)	(2.52)	(3.78)	(4.53)
Observations	283	188	95	

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: # - Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– size at birth was measured using a 5 point hedonic scale, with 1 implying very large and 5 implying very small.

- Dietary diversity score is the number of different food items consumed by child in a week preceding the survey; this was constructed using food frequency data.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.3: Different specifications of Multinomial logit model estimates for utilization of ICDS services using household perception of availability - Marginal effects for only social access cost variables

Different specification	Alternatives		Same caste dummy			Caste Category		
		All caste	Lower castes	Only ST	Other except ST	SC	ST	OBC
Model 2	Nutrition					0.015	0.099***	-0.130***
						(0.011)	(0.013)	(0.012)
	Health					-0.119***	-0.268***	-0.077***
						(0.015)	(0.023)	(0.007)
	Comprehensive					-0.196***	-0.098***	0.074***
						(0.019)	(0.025)	(0.008)
	None					0.247***	0.225***	0.128***
						(0.019)	(0.021)	(0.011)
Model 3	Nutrition	0.100***						
		(0.007)						
	Health	-0.122***						
		(0.009)						
	Comprehensive	0.060***						
		(0.009)						
	None	-0.030***						
		(0.007)						
Model 4	Nutrition		0.152***			-0.095***	-0.025*	-0.218***
			(0.012)			(0.016)	(0.013)	(0.018)
	Health		-0.032***			-0.089***	-0.235***	-0.050***
			(0.004)			(0.016)	(0.022)	(0.006)
	Comprehensive		-0.072***			-0.207***	-0.087***	0.111***
			(0.010)			(0.020)	(0.023)	(0.012)
	None		-0.053***			0.330***	0.300***	0.154***
			(0.009)			(0.024)	(0.023)	(0.015)
Model 5	Nutrition			0.065	0.127***			
				(0.004)	(0.007)			
	Health			-0.072	-0.085***			
				(0.006)	(0.007)			
	Comprehensive			0.075	-0.010			
				(0.006)	(0.008)			
	None			-0.068	-0.032***			
				(0.005)	(0.004)			

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.4: Multinomial logit model estimates for utilization of ICDS services conditional on household perception of availability (beta coefficients)

Variables	Nutrition service		Investment service		Both services	
Age (in months)	-0.003	(0.003)	-0.199***	(0.006)	-0.046***	(0.003)
Male Dummy	-0.707***	(0.107)	-0.874***	(0.117)	-0.553***	(0.107)
Birth Order[#]	0.765***	(0.072)	-0.317***	(0.086)	0.122	(0.078)
Distance to AWC (meter)	-0.005***	(0.000)	-0.007***	(0.000)	-0.007***	(0.000)
Mother's age (years)	-0.827***	(0.043)	-0.242***	(0.037)	-0.428***	(0.034)
Mother's education (years)	0.172***	(0.022)	-0.146***	(0.020)	-0.122***	(0.018)
Dummy for working mother	1.401***	(0.212)	2.228***	(0.221)	1.844***	(0.239)
Mother's height (cm)	-0.179***	(0.012)	-0.027***	(0.012)	-0.035***	(0.011)
Father's age (years)	0.782***	(0.043)	0.385***	(0.037)	0.570***	(0.035)
Father's education (years)	-0.445***	(0.022)	-0.246***	(0.018)	-0.156***	(0.018)
Assets owned[##]	0.428***	(0.066)	-1.174***	(0.097)	-0.420***	(0.084)
Number of children	1.444***	(0.082)	1.018***	(0.082)	0.951***	(0.075)
Dummy for same caste as AWW	2.161***	(0.158)	0.004	(0.172)	0.534***	(0.153)
SC	-3.158***	(0.249)	-4.472***	(0.244)	-4.605***	(0.221)
ST	-1.936***	(0.357)	-5.753***	(0.289)	-4.242***	(0.240)
BC	-3.163***	(0.218)	-1.532***	(0.215)	-1.018***	(0.191)
Jharkhand	-1.013***	(0.325)	5.860***	(0.243)	6.497***	(0.234)
Orissa	-1.551***	(0.202)	1.939***	(0.230)	3.833***	(0.193)
Constant	25.689***	(1.937)	10.322***	(1.754)	3.009*	(1.807)
Log likelihood	-4696.15					
Number of observations	249					

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: # - Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.5: Results for tests conducted to evaluate matching quality between household not participating in ICDS program (control) and households utilizing only one of the two ICDS services (treatment)

Variables	Weight-for-age z-scores			Height-for-age z-scores		
	Difference in means before matching[†]	Difference in means after matching[†]	Reduction in bias	Difference in means before matching[†]	Difference in means after matching[†]	Reduction in bias
Age of the child (months)	-17.229***	3.244	81.2	-17.318***	7.005	59.6
Male (dummy)	0.041	-0.058	-42.1	0.043	0.090	-110.5
Birth order[#]	0.128	0.014	89.1	0.231	0.038	83.6
Morbidity (dummy)	0.231***	-0.065	71.8	0.248***	-0.004	98.4
Size at birth[##]	-0.013	-0.050	-292.3	-0.027	-0.033	-22.4
Distance to ICDS center (meters)	-443.25***	-16.95	96.2	-423.530***	6.850	98.4
Same caste as ICDS worker (dummy)	0.212	-0.015	92.8	0.227***	-0.175**	23.2
Mother's age (years)	-1.344	0.935	30.4	-1.324	0.206	84.4
Mother's education (years)	-0.508	-0.722	-42.1	-1.026	-2.657***	-159.1
Working mother (dummy)	-0.008	-0.002	72.7	0.001	0.045	-3199.5
Father's age (years)	-0.701	1.043	-48.9	-0.861	0.750	12.9
Father's education (years)	-1.932***	-0.792	59.0	-1.870**	-2.696***	-44.2
Using clean fuel (dummy)	-0.100*	-0.052	48.3	-0.095	-0.155**	-63.8
Asset owned[###]	-0.676***	-0.201	70.3	-0.731***	-0.357*	51.1
Caste-SC (dummy)	0.044	0.007	84.7	0.054	-0.013	75.2
Caste-ST (dummy)	0.115	-0.065	43.8	0.103	-0.052	48.9
Caste-OBC (dummy)	-0.009	0.021	-146.8	0.047	-0.007	85.5
Land less household (dummy)	0.005	-0.137	-2564.3	0.004	-0.128	-3538.4
Marginal land holding (dummy)	-0.088	-0.051	42.1	-0.069	0.075	-7.7
Medium land holding (dummy)	0.100	0.100	-0.1	0.086	0.077	10.2
Large land holding (dummy)	-0.017	0.088	-412.3	-0.020	-0.024	-20
Bihar (dummy)	-0.328***	0.035	89.5	-0.265***	-0.083	68.7
Jharkhand (dummy)	0.267***	-0.045	83.2	0.296***	-0.005	98.3
Orissa (dummy)	0.062	0.010	83.4	-0.032	0.088	-178.2
Pseudo-R^2	0.530***	0.171		0.498***	0.247*	
Number of observations	151			132		

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: † - Difference in mean = Mean of treatment group – Mean of control group

- Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– size at birth was measured using a 5 point hedonic scale, with 1 implying very large and 5 implying very small.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.6: Results for tests conducted to evaluate matching quality between household utilizing only one of the two ICDS services (control) and households utilizing both of the ICDS services (treatment)

Variables	Weight-for-age z-scores			Height-for-age z-scores		
	Difference in means before matching†	Difference in means after matching†	Reduction in bias	Difference in means before matching†	Difference in means after matching†	Reduction in bias
Age of the child (months)	23.044***	19.405***	15.8	25.934***	23.308***	10.1
Male (dummy)	-0.101	0.031	69.3	-0.074	0.035	52.5
Birth order#	0.333	0.065	80.4	0.157	-0.092	41.1
Morbidity (dummy)	-0.111	0.025	77.3	-0.212**	0	99.8
Size at birth##	-0.108	-0.010	90.4	-0.11	0.016	85.3
Distance to ICDS center (meters)	37.320	-23.010	38.4	35.89	-17.92	50.1
Same caste as ICDS worker (dummy)	-0.003	0.055	-1606.1	-0.029	0.075	-154.8
Mother's age (years)	3.226***	0.498	84.6	2.883**	0.721	75
Mother's education (years)	-0.441	-0.651	-47.6	-0.398	0.419	-5.4
Working mother (dummy)	0.001	-0.005	-620.7	-0.003	-0.016	-444.8
Father's age (years)	3.976***	0.524	86.8	3.583***	1.501	58.1
Father's education (years)	0.058	0.222	-280.2	-0.243	0.224	7.9
Using clean fuel (dummy)	0.012	0.019	-58.4	-0.052	0.01	81.1
Asset owned###	0.152	-0.082	45.6	0.159	0.028	82.4
Caste-SC (dummy)	-0.031	-0.025	19.7	-0.077	-0.022	71.9
Caste-ST (dummy)	0.036	0.060	-65.6	0.077	0.025	67
Caste-OBC (dummy)	-0.006	-0.028	-340.3	-0.047	-0.011	76.9
Land less household (dummy)	0.046	0.026	43.4	0.068	0.054	20.4
Marginal land holding (dummy)	0.024	0.082	-246.5	-0.007	-0.013	-87.6
Medium land holding (dummy)	0.024	0.084	-243.8	0.005	0.044	-707.3
Large land holding (dummy)	-0.094	-0.192***	-105.1	-0.067	-0.086	-28.4
Bihar (dummy)	-0.063	0.021	66.5	-0.089	0.041	54.1
Jharkhand (dummy)	-0.057	-0.017	70.9	-0.041	-0.059	-42.6
Orissa (dummy)	0.121	-0.004	96.3	0.13	0.018	86
Pseudo-R^2	0.416***	0.342***		0.564***	0.516***	
Number of observations	136			120		

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: † - Difference in mean = Mean of treatment group – Mean of control group

- Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– size at birth was measured using a 5 point hedonic scale, with 1 implying very large and 5 implying very small.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.7: Results for tests conducted to evaluate matching quality between household not participating in ICDS program (control) and households utilizing both of the ICDS services (treatment)

Variables	Weight-for-age z-scores			Height-for-age z-scores		
	Difference in means before matching†	Difference in means after matching†	Reduction in bias	Difference in means before matching†	Difference in means after matching†	Reduction in bias
Age of the child (months)	-2.402	-7.496**	-212.0	-1.414	-1.088	23.1
Male (dummy)	-0.027	-0.137	-408.6	-0.015	0.072	-371.7
Birth order#	0.307	0.212	31.0	0.232	0.018	92.1
Morbidity (dummy)	0.144*	0.065	54.6	0.106	0.195*	-84.4
Size at birth##	-0.158*	0.008	95.1	-0.183*	-0.040	78.1
Distance to ICDS center (meters)	-455.570***	0.820	99.8	-433.790***	-21.620	95.0
Same caste as ICDS worker (dummy)	0.216***	-0.144**	33.3	0.180**	0.056	68.7
Mother's age (years)	0.703	-1.963**	-179.2	0.469	-0.147	68.6
Mother's education (years)	-0.407	-0.423	-4.0	-0.840	0.467	44.3
Working mother (dummy)	-0.053	0.022	57.7	-0.037	-0.020	45.9
Father's age (years)	2.268**	-0.772	65.9	1.563	0.236	84.9
Father's education (years)	-2.189***	-1.076	50.8	-2.597***	0.159	93.9
Using clean fuel (dummy)	-0.098	0.073	26.0	-0.145**	-0.064	55.8
Asset owned###	-0.501**	-0.353**	29.7	-0.603***	-0.236	60.8
Caste-SC (dummy)	-0.037	0.043	-17.0	-0.054	-0.003	94.6
Caste-ST (dummy)	0.248***	-0.053	78.7	0.263***	0.042	83.9
Caste-OBC (dummy)	-0.069	0.021	70.2	-0.058	-0.019	67.8
Land less household (dummy)	0.03	0.121	-309.6	0.050	-0.008	83.8
Marginal land holding (dummy)	-0.047	-0.024	49.2	-0.004	-0.109	-2368.7
Medium land holding (dummy)	0.101	-0.116	-14.7	0.062	0.106	-70.7
Large land holding (dummy)	-0.084	0.019	77.8	-0.108	0.011	89.6
Bihar (dummy)	-0.635***	-0.013	98.0	-0.612***	0.008	98.7
Jharkhand (dummy)	0.419***	-0.003	99.3	0.459***	-0.031	93.2
Orissa (dummy)	0.217***	0.016	92.8	0.153**	0.023	84.9
Pseudo-R^2	0.618***	0.266***		0.590***	0.205	
Number of observations	149			134		

Source: Based on data collected by VDSA and through an add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012

Notes: † - Difference in mean = Mean of treatment group – Mean of control group

- Birth order 1 is assigned to first born child, and an increasing value is assigned to subsequently born children.

– size at birth was measured using a 5 point hedonic scale, with 1 implying very large and 5 implying very small.

– an index for number of assets owned constructed using PCA.

Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.

Appendix Table A.8: Re-estimating impact of ICDS participation on child height and weights by including children with missing anthropometric data, using different methods to estimate impact

Comparisons	Impact of utilizing ICDS services on Weight-for-age z scores		Impact of utilizing ICDS services on Height-for-age z scores	
	Propensity Score Matching	Covariate Matching	Propensity Score Matching	Covariate Matching
Assuming a z-score of -1 for children with missing anthropometric data				
ICDS participation[#]	0.48***	0.65***	0.11***	0.15
vs. not participating	(0.02)	(0.18)	(0.03)	(0.24)
Either service[##]	0.18***	0.34	0.29***	0.03
vs. not participating	(0.03)	(0.31)	(0.04)	(0.27)
Both services[###]	0.47***	0.66***	0.39**	0.40
vs. either service[##]	(0.05)	(0.23)	(0.05)	(0.27)
Both services[###]	0.46***	0.74***	0.47***	-0.03
vs. not participating	(0.03)	(0.17)	(0.04)	(0.48)
Assuming a z-score of -0.5 for children with missing anthropometric data				
ICDS participation[#]	0.49***	0.67***	0.17***	0.08
vs. not participating	(0.02)	(0.14)	(0.03)	(0.25)
Either service[##]	0.17***	0.36	0.35***	0.14
vs. not participating	(0.03)	(0.31)	(0.04)	(0.27)
Both services[###]	0.47***	0.60***	0.37***	0.35
vs. either service[##]	(0.05)	(0.24)	(0.05)	(0.27)
Both services[###]	0.46***	0.66***	0.52***	0.11
vs. not participating	(0.03)	(0.17)	(0.04)	(0.48)
Assuming a z-score of 0 for children with missing anthropometric data				
ICDS participation[#]	0.50***	0.69***	0.22***	0.02
vs. not participating	(0.02)	(0.18)	(0.03)	(0.26)
Either service[##]	0.17***	0.39	0.41***	0.25
vs. not participating	(0.03)	(0.32)	(0.04)	(0.27)
Both services[###]	0.47***	0.55**	0.36***	0.30
vs. either service[##]	(0.05)	(0.24)	(0.05)	(0.28)
Both services[###]	0.46***	0.59***	0.57***	0.25
vs. not participating	(0.03)	(0.17)	(0.04)	(0.49)

Source: Based on data collected by VDSA and through add-on module to VDSA in Bihar, Jharkhand and Orissa in 2012
Notes: # - ICDS participation implies utilizing at least one ICDS service
– Either service implies utilizing either nutrition or investment service
- Both services implies utilizing both nutrition and investment services
Standard error in parentheses; ***, ** and * indicate significance at 1, 5 and 10 percent respectively.