

Table 1: Sample characteristics

	Households with grandmothers		Households without grandmothers		P-value ¹
	N= 748		N=651		
	%/Mean	SD	%/Mean	SD	
Child					
Sex: male (0/1)	49.3		51.0		0.53
Age in months (range: 6 to 24)	14.2	5.2	14.6	5.1	0.15
Age groups					
6-8.9 months	17.7		14.0		
9-11.9 months	18.7		17.8		
12-14.9 months	18.3		18.7		
15-17.9 months	14.8		17.1		
18-20.9 months	13.8		15.8		
21-23.9 months	16.7		16.6		0.39
Decision-maker: child feeding					
Mother	72.1		92.2		
Grandmother	10.3		0.30		
Other	17.6		7.5		<0.001
Mother					
Age in years (range: 15-42)	23.6	4.5	26.8	6.1	<0.001
Education: years of formal schooling completed (range: 0-14)	5.9	4.1	4.0	4.1	<0.001
Participation in wage/salary employment in past 12 months: yes (0/1)	13.2		18.0		0.01
Number of sources from which nutrition information ever heard (range: 0-10)	0.9	1.4	0.76	1.4	0.12
Currently residing in own mother's home: yes (0/1)	4.7		1.8		0.003
Grandmother					
Age in years (range: 35-85) ²	55.1	9.3	NA		NA
Education: years of formal schooling (range: 0-12) ²	0.3	1.2	NA		NA
Household					
Number of children under 5 years of age	1.4	0.6	1.4	0.52	0.72
Agro-ecological zone of residency					
Mountain	23.5		27.0		
Hill	52.7		51.8		
Terai	23.8		21.2		0.25
Caste/ethnicity					
<i>Dalit</i>	17.4		21.8		
Disadvantaged <i>Janajatis</i>	21.9		24.0		
Disadvantaged non- <i>Dalit Terai</i>	5.2		3.2		
Religious minorities (Muslim/Churoute)	0.8		1.5		
Relatively advantaged <i>Janajatis</i>	5.2		4.8		
Most advantaged (Brahmin/Chettri/Thakuri/Sanyasi)	49.5		44.7		0.06
Food security (measured with Household Food Insecurity Access Scale (HFIAS))					
Severely food insecure	0.9		3.2		
Moderately food insecure	5.8		13.1		
Mildly food insecure	11.2		19.1		
Food secure	82.1		64.7		<0.001
Wealth quintiles					
Poorest	20.1		20.0		
Second poorest	20.1		20.0		
Middle income	19.9		20.0		
Second wealthiest	20.1		20.0		
Wealthiest	19.9		20.0		<0.001

¹ P-values calculated using ANOVA for variables with mean values reported and Chi² for variables with prevalence.

² Data missing for 1-2 individuals (N=747, N=746)

Table 2: Infant and young child feeding: grandmothers' knowledge, maternal knowledge, and household practices

	Households with grandmothers		Households without grandmothers		P-Value
	N	%	N	%	
Grandmothers' knowledge					
Initial breastfeeding: should be within one hour of birth	744	71.2			NA
Colostrum: should be given to child	740	83.1			NA
Each complementary food should be introduced at 6 to 9 months of age:					
Water	743	46.4			NA
Milk and milk products	743	54.9			NA
Semi-solid foods	743	70.7			NA
Solid foods	743	74.2			NA
Eggs	743	49.3			NA
Meat	743	45.1			NA
All 6 complementary foods	743	17.2			NA
Mothers' knowledge					
Initial breastfeeding: should be within one hour of birth	NA	NA	NA	NA	NA
Colostrum: should be given to child	744	92.9	647	90.4	0.17
Each complementary food should be introduced at 6 to 9 months of age:					
Water	748	54.8	651	54.5	0.92
Milk and milk products	747	66.0	651	63.6	0.35
Semi-solid foods	747	78.2	651	78.6	0.83
Solid foods	747	76.3	651	78.3	0.36
Eggs	747	56.4	651	56.4	0.99
Meat	747	53.5	651	53.3	0.93
All 6 complementary foods	747	27.7	651	27.6	0.98
IYCF practices					
Initial breastfeeding: within one hour of birth	748	64.2	651	67.4	0.20
Colostrum: given to child	740	90.1	649	91.1	0.54
Each complementary food introduced at 6 to 9 months of age:					
Water	748	36.9	651	35.8	0.67
Milk and milk products	748	36.6	651	37.6	0.70
Semi-solid foods	748	64.3	651	63.1	0.65
Solid foods	748	70.4	651	67.7	0.27
Eggs	748	51.6	651	51.1	0.87
Meat	748	51.3	651	52.4	0.70
All 6 complementary foods	748	12.6	651	11.5	0.55

Note: NA = Not Available

Table 3: Associations between grandmothers' correct knowledge and correct IYCF practices among children 6 to 24 months of age

	Household practices						
	N	Crude ¹			Adjusted ²		
		OR	95% C.I	P-value ³	OR	95% C.I	P-value ³
Breastfeeding initiation	740	1.89	(1.17, 3.06)	<0.001	2.16	(1.33, 3.52)	0.002
Colostrum feeding	740	3.84	(2.94, 5.01)	<0.001	4.24	(2.81, 6.40)	<0.001
Timing of introduction of complementary foods:							
Water	735	2.46	(1.63, 3.72)	<0.001	2.60	(1.64, 4.11)	<0.001
Milk (other than breast milk)	739	1.92	(1.20, 3.06)	0.007	2.38	(1.49, 3.80)	<0.001
Semi-solid foods	741	3.30	(1.98, 5.50)	<0.001	3.20	(1.88, 5.44)	<0.001
Solid foods	739	3.07	(2.23, 4.26)	<0.001	2.93	(2.08, 4.13)	<0.001
Eggs	739	2.05	(1.34, 3.11)	0.001	2.64	(1.57, 4.43)	<0.001
Meat	739	2.01	(1.46, 2.77)	<0.001	2.46	(1.67, 3.62)	<0.001
All 6 complementary foods	678	2.08	(1.05, 4.12)	0.035	2.55	(1.42, 4.56)	0.002

¹ Controlled for district level clustering.

² Adjusted for district level clustering, all child factors (age, sex, and decision-making on child feeding), maternal factors (age, education, participation in wage/salary employment, number of sources from which nutrition information ever heard, and currently residing in own mother's home), grandmother factors (age and education) and household factors (number of children under 5 years of age, agro-ecological zone of residency, ethnicity, food security, wealth quintiles) and whether the household belonged to the intervention area or not.

³ From Wald test

Figure 1: Empirical model for direct and indirect effects of grandmothers' knowledge on colostrum feeding and actual practice

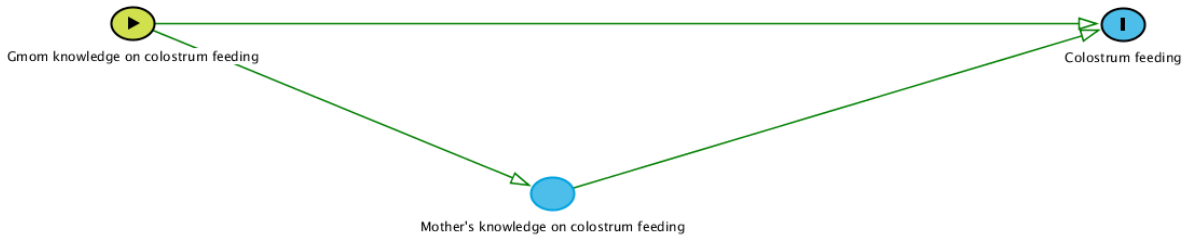


Figure 2: Empirical model for direct and indirect effects of grandmothers' knowledge on timely introduction of complementary foods and actual practice

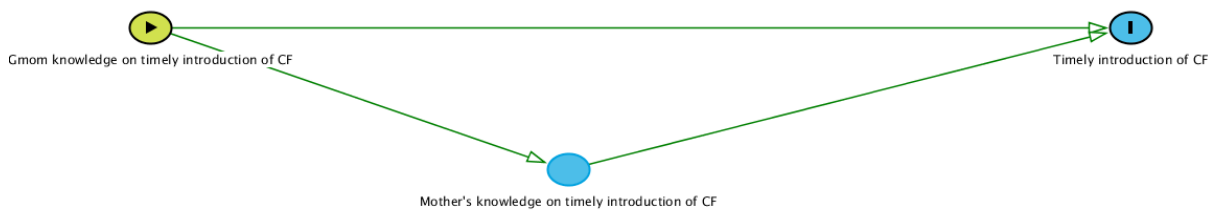


Table 4 Path analysis: exponentiated effects for grandmother's knowledge and colostrum feeding (n=737)

	Colostrum feeding ¹	Maternal knowledge – colostrum feeding ¹
Grandmother's correct knowledge	0.12	2.06***
Mother's correct knowledge	5.30***	NA
Child age		
9-11.9 months	-0.10	0.66
12-14.9 months	0.30	0.45
15-17.9 months	0.61	-0.09
18-20.9 months	0.77	-0.07
21-23.9 months	1.26	0.54
Child sex	0.67	-0.57
Child feeding decision-maker		
Grandmother	0.50	-0.14
Other	-0.68	-0.09
Maternal age	0.01	0.10*
Maternal education		
Some primary	-0.33	0.39
Completed primary	-0.46	0.34
Some secondary	-0.73†	1.45**
Completed secondary	0.85	0.98*
Higher level	-0.63	2.53*
Maternal employment	0.24	-0.68
Maternal nutrition information: number of sources	0.04	-0.14
Maternal residency with own mother	-1.03	1.27
Grandmother's age	0.01	0.01
Grandmother's education		
Some primary	-1.57*	-1.19
Completed primary	14.1***	14.4***
Some secondary	13.8***	13.7***
Completed secondary	13.6***	11.9***
Higher level	13.3***	14.5***
Household agro-ecological zone of residency		
Hill	0.19	-1.18†
Terai	0.51	-1.09
Household caste/ethnicity		
Disadvantaged <i>Janajatis</i>	-0.03	0.62

Disadvantaged non- <i>Dalit Terai</i>	0.64	0.00
Religious minorities (Muslim/Churoute)	17.1***	-1.13
Relatively advantaged <i>Janajatis</i>	0.05	-0.43
Most advantaged (Brahmin/ Chettri/Thakuri/Sanyasi)	0.25	0.31
Household food security		
Mildly food insecure	-0.44	0.09
Moderately food insecure	-1.13	-0.43
Severely food insecure	1.61	-1.07
Household socio-economic status		
Second poorest	0.63	-0.20
Middle income	0.01	0.17
Second wealthiest	-0.25	0.86
Wealthiest	0.21	0.54
Household number of children under 5 years of age		
2	0.36	0.19
3 or more	0.27	0.98

¹ Adjusted for clustering at district level
†p<0.10, *p<0.05, **p<0.01, ***p<0.001

Table 5 Path analysis: exponentiated effects for grandmother's knowledge and introduction of complementary foods (n=741)

	Timely introduction of all complementary foods ¹	Maternal knowledge – introduction of complementary foods ¹
Grandmother's correct knowledge	0.15	2.07***
Mother's correct knowledge	2.50***	NA
Child age		
9-11.9 months	-1.93***	0.62†
12-14.9 months	-1.14***	0.33
15-17.9 months	-1.52***	0.67†
18-20.9 months	-1.72**	0.34
21-23.9 months	-1.22***	0.24
Child sex	-0.63†	0.01
Child feeding decision-maker		
Grandmother	-0.76	-0.13
Other	-0.54	0.42
Maternal age	0.03	-0.02
Maternal education		
Some primary	-0.20	0.01
Completed primary	0.55	0.05
Some secondary	-0.37	0.52
Completed secondary	-0.32	0.34
Higher level	-1.40†	0.28
Maternal employment	0.18	0.32
Maternal nutrition information: number of sources	0.01	-0.04
Maternal residency with own mother	0.84	-0.81
Grandmother's age	0.01	0.01
Grandmother's education		
Some primary	0.88	-1.1*
Completed primary	-13.8***	-0.69
Some secondary	3.01***	0.37
Completed secondary	-10.4***	-14.4***
Higher level	-13.0***	0.94
Household agro-ecological zone of residency		
Hill	-0.39	-0.07
Terai	-1.52†	-0.41
Household caste/ethnicity		
Disadvantaged <i>Janajatis</i>	-0.53	0.02
Disadvantaged non- <i>Dalit Terai</i>	-13.4***	0.63

Religious minorities (Muslim/Churoute)	-12.0***	-14.9***
Relatively advantaged <i>Janajatis</i>	0.03	-0.28
Most advantaged (Brahmin/Chettri/Thakuri/Sanyasi)	-0.17	-0.51
Household food security		
Mildly food insecure	0.15	0.09
Moderately food insecure	-0.22	0.15
Severely food insecure	-15.7***	0.20
Household socio-economic status		
Second poorest	-0.69†	0.91**
Middle income	-0.37	0.18
Second wealthiest	-0.72*	0.44†
Wealthiest	-2.30**	0.92*
Household number of children under 5 years of age		
2	0.39	0.27
3 or more	-0.22	0.14

Figure 3 Exponentiated coefficients (b) for direct and indirect effects of grandmothers' knowledge on colostrum feeding and actual practice

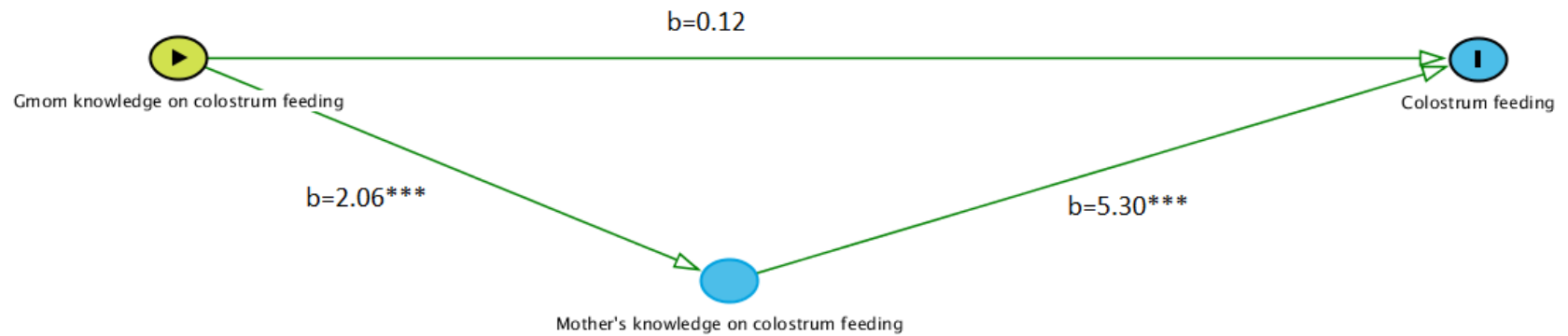
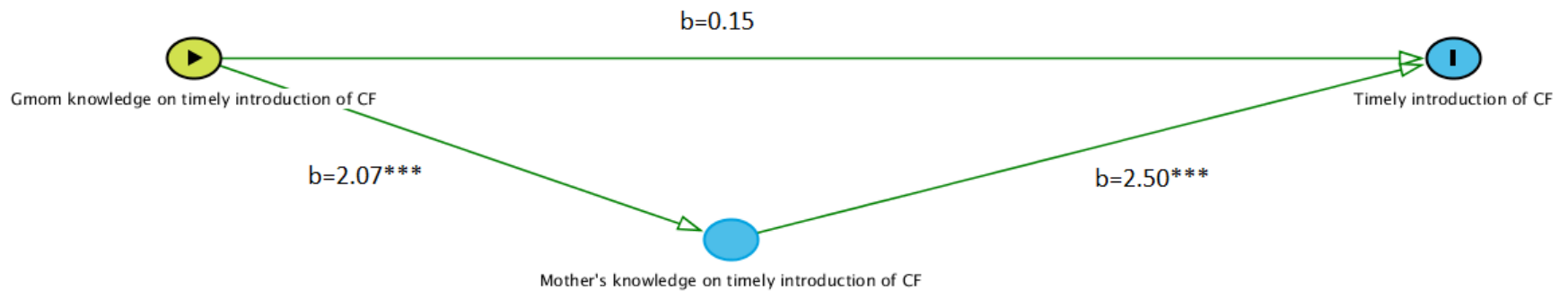


Figure 4: Exponentiated coefficients (b) for direct and indirect effects of grandmothers' knowledge on timely introduction of complementary foods and actual practice



*** $p < 0.001$