

Appendix A. Crude odds ratio for predictors of underweight across ecological zones

Predictors	Pooled (n=240)			Pastoral (n=55)		Agro-pastoral (n=96)		Agricultural (n=89)	
	Crude Odds Ratio	[95% C.I]	P>z	Crude Odds Ratio	P>z	Crude Odds Ratio	P>z	Crude Odds Ratio	P>z
				[95% C.I]		[95% C.I]		[95% C.I]	
Age of household head	0.984	[0.962-1.007]	0.164	0.947	[0.898-0.999]	0.048 *	0.983	[0.945-1.022]	0.390
Sex of the child ^a	1.497	[0.840-2.665]	0.170	8.307	[0.766-23.945]	0.137	1.977	[0.872-4.482]	0.103
Height/ length	0.972	[0.935-1.011]	0.162	0.945	[0.895-0.997]	0.040 *	0.929	[0.883-0.978]	0.005 *
Education level of caregiver ^b	1.782	[0.870-3.653]	0.115	7.4	[0.699-26.236]	0.164	0.767	[0.161-3.656]	0.739
Group membership ^c	0.687	[0.439-1.076]	0.101	0.682	[0.217-2.140]	0.512	0.497	[0.208-1.190]	0.117
Household expenses	0.816	[0.726-0.918]	0.001 *	0.648	[0.364-1.153]	0.140	0.720	[0.407-1.273]	0.258
Caregiver's age	1.006	[1.005-1.007]	0.000 *	1.000	[0.975-1.026]	0.982	1.037	[0.978-1.099]	0.128
Age at introduction of complementary food	1.416	[1.186-1.690]	0.000 *	1.223	[0.709-2.107]	0.469	1.314	[0.892-1.935]	0.167
Drinking water treatment ^d	1.477	[0.676-3.227]	0.328	2.864	[0.672-12.211]	0.155	0.938	[0.404-2.174]	0.880
Sun drying of utensils ^e	0.826	[0.477-1.430]	0.494	0.708	[0.207-2.423]	0.582	0.607	[0.269-1.371]	0.230
Consumption of leftover food ^f	0.939	[0.440-2.006]	0.872	0.356	[0.110-1.149]	0.084	1.719	[0.720-4.100]	0.222
Flour storage duration	0.951	[0.901-1.004]	0.070	1.579	[0.929-2.684]	0.091	0.920	[0.864-0.980]	0.010 *
Cooking duration	1.361	[1.172-1.581]	0.000 *	1.739	[1.186-2.552]	0.005 *	1.266	[0.816-1.964]	0.293
Breastfeeding ^g	2.109	[1.665- 2.671]	0.000 *	2.444	[0.794-7.526]	0.119	1.794	[0.712-4.519]	0.215
Latrine ownership ^h	1.398	[0.575-3.398]	0.460	3.208	[0.592-17.388]	0.176	0.764	[0.304-1.919]	0.567
Cereals storage (sacks) ⁱ	0.715	[0.414-1.236]	0.230	1.583	[0.533-4.701]	0.408	0.4795	[0.206-1.116]	0.088
Cereals storage (granary) ^j	1.363	[0.917- 2.026]	0.126	0.7936	[0.257-2.453]	0.688	1.535	[0.681-3.459]	0.301
Constant	26.226	[0.293-2346.82]	0.154	3.42E+09	[1.325-8.84E+18]	0.047	83342.88	[1.74615-3.98E+09]	0.039
Wald chi ² (19)	48.51			39.22			30.66		25.23
Prob > chi ²	0.00			0.002			0.022		0.047

Log likelihood	-139.525	-19.156	- 43.200	- 47.002
Pseudo R ²	0.158	0.484	0.351	0.235

a, 1=male, 0=female; b, 1=primary and above, 0=no formal education; c, 1=yes, the parent belongs to a group, 0=no; d, 1=treated by boiling or tablets, 0= not treated; e, 1=yes, 0=no; f, 1=more than 1 day, 0=same day; g, 1= yes, the child is still breastfeeding, 0=No; h, 1=yes, 0=no; i, 1=yes, 0=no; and j, 1=yes, 0=no. Other storage methods were considered as base category for storage methods. C.I denotes confidence interval. * Shows statistical significance (p<0.05).

Appendix B. Crude odds ratio for predictors of stunting across ecological zones

Predictors	Pooled (n=240)			Pastoral (n=55)			Agro-pastoral (n=96)			Agricultural (n=89)		
	Crude Odds Ratio [95% C.I]	P>z		Crude Odds Ratio [95% C.I]	P>z		Crude Odds Ratio [95% C.I]	P>z		Crude Odds Ratio [95% C.I]	P>z	
Number of children under five	0.925 [0.694-1.231]	0.591		0.603 [0.254-1.433]	0.252		1.048 [0.714-1.538]	0.811		1.010 [0.479-2.127]	0.980	
Weight	0.800 [0.668-0.957]	0.015 *		0.702 [0.546-0.903]	0.006 *		0.894 [0.782-1.022]	0.100		0.703 [0.588-0.841]	0.000 *	
Sex of the child ^a	1.551 [1.002-2.399]	0.049 *		2 [0.665-6.011]	0.217		2.039 [0.893-4.657]	0.091		1.054 [0.456-2.436]	0.902	
Occupation of household head ^b	0.514 [0.259-1.021]	0.057		0.159 [0.031-0.812]	0.027 *		0.792 [0.212-2.956]	0.728		0.669 [0.277-1.615]	0.372	
Training frequency on child feeding practices ^c	0.608 [0.419-0.881]	0.009 *		0.707 [0.228-2.195]	0.549		0.420 [0.113-1.554]	0.194		0.814 [0.346-1.917]	0.638	
Education level of caregiver ^d	1.315 [0.919-1.882]	0.134		1.039 [0.322-3.353]	0.949		1.709 [0.358-8.156]	0.501		0.699 [0.110-4.447]	0.705	
Group membership ^e	0.467 [0.182-1.199]	0.113		1.197 [0.375-3.819]	0.761		0.218 [0.082-0.579]	0.002 *		0.522 [0.193-1.417]	0.202	
Caregiver's age	1.014 [1.005-1.023]	0.002 *		1.018 [0.990-1.046]	0.207		1.041 [0.980-1.107]	0.193		1.009 [0.992-1.027]	0.307	
Flour storage duration	1.056 [1.024-1.090]	0.001 *		1.071 [0.659-1.740]	0.782		1.094 [1.017-1.176]	0.015 *		1.164 [0.871-1.556]	0.304	
Cooking duration	1.215 [0.941-1.568]	0.135		1.480 [1.064-2.059]	0.020 *		1.009 [0.660-1.540]	0.968		1.684 [1.033-2.746]	0.036 *	
Breastfeeding ^f	1.249 [0.807-1.935]	0.319		2.017 [0.659-6.171]	0.219		0.927 [0.3738-2.301]	0.871		1.356 [0.584-3.150]	0.478	
Consumption of leftover food ^g	0.976 [0.890-1.071]	0.613		0.961 [0.839-1.100]	0.560		0.815 [0.689-0.963]	0.017 *		0.892 [0.752-1.058]	0.188	
Caregiver hand washing after using latrine ^h	1.178 [0.412-3.373]	0.760		4.191 [1.149-15.290]	0.030 *		0.688 [0.304-1.556]	0.369		3.375 [0.333-34.204]	0.303	

Diarrhoea in the last 14 days ⁱ	0.954 [0.928-0.980]	0.001 *	0.957 [0.748-1.225]	0.726	0.963 [0.791-1.173]	0.711	0.974 [0.791-1.200]	0.806
Cereals storage (sacks) ^j	0.975 [0.611-1.556]	0.915	0.729 [0.243- 2.184]	0.572	1.288 [0.562-2.956]	0.550	0.718 [0.271-1.897]	0.504
Cereals storage (granary) ^k	0.796 [0.364-1.741]	0.567	0.982 [0.315-3.061]	0.975	0.480 [0.211-1.092]	0.080	1.591 [0.590-4.295]	0.359
Constant	213.184 [101.725-446.766]	0.002	180264.1 [0.605-5.37E+10]	0.06	695.042 [2.502-193040.5]	0.023	208.943 [0.939-46481.65]	0.053
Wald chi ² (19)	58.3		27.45		32.83		33.26	
Prob > chi ²	0.000		0.037		0.008		0.003	
Log likelihood	-130.414		-15.600		-40.078		-41.349	
Pseudo R ²	0.216		0.583		0.393		0.329	

a, 1=male, 0=female; b, 1=crop farmer, 0=others (pastoralists, agro-pastoralists, traders, casual labourers and civil servant); c, 1=at least once, 0=never; d, 1=primary and above, 0=no formal education; e, 1=yes, the parent belongs to a group, 0=no; f, 1= yes, the child is still breastfeeding, 0=No; g, 1=more than 1 day, 0=same day; h, 1=always, 0=rarely and never; i, 1=yes, 0=no; j, 1=yes, 0=no; and k, 1=yes, 0=no. Other storage methods were considered as base category for storage methods. C.I denotes confidence interval. * Shows statistical significance (p<0.05).

Appendix C. Crude odds ratio for predictors of wasting among children under five across ecological zones

Predictors	Pooled (n=240)			Pastoral (n=55)			Agro-pastoral (n=96)			Agricultural (n=89)		
	Crude Odds Ratio [95% C.I]	P>z		Crude Odds Ratio [95% C.I]	P>z		Crude Odds Ratio [95% C.I]	P>z		Crude Odds Ratio [95% C.I]	P>z	
Age of household head	0.974 [0.945-1.003]	0.080		0.971 [0.916-1.028]	0.313		0.944 [0.893-0.997]	0.039 *		0.987 [0.957-1.018]	0.410	
Number of children under five	0.837 [0.736-0.951]	0.006 *		0.712 [0.286-1.774]	0.466		0.847 [0.583-1.231]	0.384		0.665 [0.3067-1.443]	0.302	
Age of child	0.949 [0.915-0.984]	0.005 *		0.989 [0.949-1.031]	0.600		0.921 [0.870-0.974]	0.004 *		0.936 [0.896-0.977]	0.003 *	
Sex of the child ^a	1.632 [1.024-2.602]	0.039 *		2 [0.648-6.177]	0.228		2.121 [0.934-4.817]	0.072		1.077 [0.463-2.504]	0.863	
Education level of caregiver ^b	0.973 [0.400-2.366]	0.952		1.926 [0.590-6.289]	0.278		0.342 [0.062-1.872]	0.216		2.000 [0.314-12.733]	0.463	
Household expenses	0.715 [0.579-0.884]	0.002 *		0.535 [0.261-1.097]	0.088		0.666 [0.381-1.164]	0.154		0.644 [0.408-1.017]	0.059	
Age at introduction of complementary food	1.020 [1.011-1.028]	0.000 *		1.140 [0.687-1.892]	0.612		1.022 [0.710-1.472]	0.905		1.010 [0.566-1.803]	0.973	
Drinking water treatment ^c	2.412 [2.323-0.504]	0.000 *		2.071 [0.558-7.684]	0.276		2.391 [1.009-5.663]	0.048 *		7.968 [0.816-22.792]	0.099	
Consumption of leftover food ^d	0.617 [0.493-0.773]	0.000 *		0.886 [0.284-2.765]	0.835		0.663 [0.279-1.575]	0.352		0.351 [0.081-1.518]	0.161	

Breastfeeding ^e	2.674 [1.571-4.550]	0.000 *	1.238 [0.391-3.916]	0.716	3.375 [1.285-8.862]	0.014 *	3.4 [1.407-8.214]	0.007 *
Washing of the child's hand before feeding ^f	1.135 [0.779-1.655]	0.509	6.6 [0.691-18.739]	0.128	0.381 [0.110-1.322]	0.128	1.244 [0.477-3.243]	0.655
Constant	3546.552 [1578.626- 7967.706]	0.000	110171.9 [1.308- 9.28E+09]	0.045	30202.38 [0.243- 3.75E+09]	0.085	15875.67 [2.839- 8.88E+07]	0.028
Wald chi ² (19)	47.8		18.08		27.75		26.98	
Prob > chi ²	0		0.080		0.004		0.005	
Log likelihood	-137.099		-24.775		-45.136		-45.703	
Pseudo R ²	0.171		0.313		0.321		0.251	

a, 1=male, 0=female; b, 1=primary and above, 0=no formal education; c, 1=treated by boiling or tablets, 0= not treated; d, 1=more than 1 day, 0=same day; e, 1=yes, 0=no; and f, 1=always, 0=rarely and never; C.I denotes confidence interval; * shows statistical significance (p<0.05).