

Table 1. Mean childhood anthropometric measures by maternal decision-making and social-demographic indicators

	N = 221		WAZ ^a		HAZ		WHZ	
	n	%	μ	SD	μ	SD	μ	SD
Maternal participation in decision-making								
Low (0 to 2)	110	49.77	-0.89	0.97	-1.47	1.42	-0.17	1.04
High (3 to 8)	111	50.23	-0.66	1.00	-1.37	1.16	0.06	1.06
Maternal BMI								
Underweight (< 18.5 kg/m ²)	32	14.47	-1.03	1.01	-1.42	1.25	-0.43	0.93
Normal	146	66.06	-0.80	0.95	-1.45	1.31	-0.06	1.07
Overweight (≥ 25 kg/m ²)	43	19.46	-0.51	1.07	-1.31	1.29	0.26	0.99
Marital status								
Never married	16	7.24	-0.89	1.24	-1.66	1.64	0.03	1.29
Married	196	88.67	-0.77	0.98	-1.39	1.28	-0.07	1.04
Divorced/separated/widowed	9	4.07	-0.63	0.83	-1.56	0.84	0.21	0.79
Mother's education								
Higher than Primary	79	35.75	-0.78	1.06	-1.33	1.31	-0.12	1.04
Completed Primary (Standard 8)	100	45.25	-0.69	0.95	-1.41	1.16	0.05	1.02
Lower than Primary	42	19.00	-0.95	0.92	-1.62	1.54	-0.15	1.13
Mother's age (year)								
15 - 28	70	31.67	-0.92	0.86	-1.60	1.02	-0.12	1.04
29 - 33	77	34.84	-0.68	1.18	-1.22	1.38	-0.08	1.07
34 - 46	74	33.48	-0.74	0.87	-1.47	1.42	0.04	1.04
Child's age (month)								
6 - 16	64	28.96	-0.51	0.98	-1.07	1.38	0.07	1.12
17 - 26	79	35.75	-0.78	0.91	-1.58	1.09	-0.01	0.91
27 - 36	78	35.29	-0.98	1.03	-1.55	1.37	-0.20	1.12
Child's gender								

Daughter	115	52.04	-0.82	0.99	-1.46	1.18	-0.11	1.11
Son	106	47.96	-0.72	0.99	-1.38	1.41	0.01	0.98
Child was dewormed								
Yes	116	52.49	-0.92	0.99	-1.49	1.35	-0.20	0.98
No	105	47.51	-0.62	0.97	-1.35	1.23	0.12	1.10
Household head's gender								
Male	173	78.28	-0.75	0.98	-1.42	1.31	-0.02	1.07
Female	48	21.72	-0.86	1.01	-1.42	1.24	-0.18	0.96
Household asset index								
Highest asset tertile	70	31.67	-0.50	1.01	-0.99	1.25	0.00	1.04
Middle asset tertile	89	40.27	-0.89	1.02	-1.59	1.25	-0.09	1.02
Lowest asset tertile	62	28.05	-0.92	0.85	-1.67	1.30	-0.06	1.12
Electricity								
No	216	97.74	-0.77	0.99	-1.41	1.30	-0.05	1.06
Yes	4	1.81	-0.87	0.60	-1.14	0.72	-0.42	0.29
County								
Machakos	106	47.96	-0.73	1.02	-1.51	1.37	0.08	1.12
Makueni	115	52.04	-0.82	0.96	-1.34	1.21	-0.18	0.97
Agro-ecological zone								
Lower Midland Zone 4	111	50.23	-0.74	1.00	-1.37	1.38	-0.05	1.05
Lower Midland Zone 5	110	49.77	-0.81	0.98	-1.47	1.20	-0.06	1.05

a WAZ (weight-for-age z-scores), HAZ (height-for-age z-scores), WHZ (weight-for-height z-scores)

Table 2. OLS Regressions between three childhood anthropometric measures and social-demographic indicators

	WAZ ^a		HAZ		WHZ		Included ^b
	β	(SE)	β	(SE)	β	(SE)	
Maternal BMI							
Normal (ref)							✓
Underweight (< 18.5 kg/m ²)	-0.30†	(0.20)	-0.09	(0.24)	-0.36††	(0.20)	
Overweight (≥ 25 kg/m ²)	0.25†	(0.18)	0.04	(0.25)	0.34††	(0.18)	
Marital status							
Never married (ref)							
Married	0.09	(0.35)	0.25	(0.43)	-0.12	(0.33)	
Divorced/separated/widowed	0.17	(0.43)	0.11	(0.49)	0.10	(0.42)	
Mother's education							
Higher than Primary (ref)							
Completed Primary (Standard 8)	0.08	(0.16)	-0.05	(0.20)	0.14	(0.16)	
Lower than Primary	-0.16	(0.19)	-0.17	(0.25)	-0.08	(0.22)	
Mother's age (year)							
15 – 28 (ref)							✓
29 - 33	0.22	(0.18)	0.37†	(0.23)	0.02	(0.17)	
34 - 46	0.22†	(0.16)	0.18	(0.23)	0.16	(0.18)	
Child's age (month)							
6 - 16 (ref)							✓
17 - 26	-0.25†	(0.16)	-0.56**	(0.22)	-0.01	(0.19)	
27 - 36	-0.51**	(0.17)	-0.50††	(0.25)	-0.30†	(0.19)	
Child's gender							
Daughter (ref)							✓
Son	0.12	(0.13)	0.16	(0.18)	0.08	(0.15)	
Child was dewormed							
No (ref)							✓

Yes	-0.28**	(0.14)	-0.14	(0.17)	-0.29**	(0.15)	
Household head's gender							
Male (ref)							✓
Female	-0.02†	(0.17)	0.15	(0.22)	-0.15	(0.17)	
Household asset index							
Highest asset tertile (ref)							✓
Middle asset tertile	-0.41**	(0.16)	-0.64**	(0.20)	-0.08	(0.16)	
Lowest asset tertile	-0.40**	(0.17)	-0.63**	(0.22)	-0.09	(0.19)	
County							
Machakos (ref)							
Makueni	-0.05	(0.14)	0.22	(0.19)	-0.22†	(0.14)	
Agroecological zones							
Lower Midland Zone 4 (ref)							
Lower Midland Zone 5	-0.03	(0.14)	-0.10	(0.19)	0.04	(0.14)	

a WAZ (weight-for-age z-scores), HAZ (height-for-age z-scores), WHZ (weight-for-height z-scores)

b Variables included in subsequent analyses

Significant levels at ** $p < 0.05$, †† $p < 0.10$, † $p < 0.20$

Robust standard error in parentheses

Table 3. Mean differences in maternal decision-making stratified by childhood anthropometric measures and social-demographic indicators

Z-score categories	WAZ ^a		HAZ		WHZ	
	n	%	n	%	n	%
Below -2	20	9.05	72	32.58	6	2.71
-2 to -1	67	30.32	73	33.03	33	14.93
-1 to 0	90	40.72	47	21.27	82	37.10
0 and above	44	19.91	29	13.12	100	45.25
	$X^2(3)$	<i>p</i>	$X^2(3)$	<i>p</i>	$X^2(3)$	<i>p</i>
Pooled (N=221)	7.28	0.06*	0.73	0.87	4.22	0.24

1 st stratification by potential confounders	Across strata		2 nd stratification by z-score categories within each stratum					
	$X^2(df)$	<i>p</i>	WAZ		HAZ		WHZ	
			$X^2(3)$	<i>p</i>	$X^2(3)$	<i>p</i>	$X^2(3)$	<i>p</i>
Gender of Household Head								
Male (n=173)	0.25	0.62	9.36	0.03**	1.20	0.76	6.951	0.07*
Female (n=48)	<i>df</i> = 1		0.71	0.87	4.80	0.19	1.701	0.64
Household asset								
Highest tertile (n=70)	1.07	0.59	3.84	0.28	1.83	0.61	8.24	0.04**
Middle tertile (n=89)	<i>df</i> = 2		0.74	0.86	4.96	0.18	3.08	0.38
Lowest tertile (n=62)			8.22	0.04**	0.94	0.82	4.75	0.19
Mother's BMI								
Normal (n=146)	8.47	0.02**	8.34	0.04**	2.02	0.57	4.09	0.25
Underweight (n=32)	<i>df</i> = 2		5.32	0.15	5.11	0.16	0.87	0.65
Overweight (n=43)			9.37	0.03**	2.01	0.57	5.90	0.12

Mother's age (year)								
15-28 (n=70)	18.43	<0.01***	0.43	0.93	2.86	0.41	4.67	0.20
29-33 (n=77)	<i>df</i> = 2		4.03	0.26	3.42	0.33	5.07	0.17
34-46 (n=74)			3.82	0.28	1.27	0.74	0.50	0.92
Mother's education								
Higher than primary (n=79)	2.44	0.30	1.79	0.62	2.62	0.45	4.93	0.18
Completed primary (n=100)	<i>df</i> = 2		5.27	0.15	3.89	0.27	1.67	0.64
Lower than primary (n=42)			3.00	0.39	7.50	0.06*	2.09	0.55
Child's age (month)								
6-16 (n=64)	10.11	<0.01***	10.83	0.01**	4.42	0.22	12.44	<0.01***
17-26 (n=79)	<i>df</i> = 2		7.55	0.06*	1.77	0.62	4.13	0.25
27-36 and above (n=78)			1.60	0.66	1.96	0.58	2.91	0.41
Child's gender								
Daughter (n=115)	0.71	0.40	7.10	0.07*	2.34	0.51	3.33	0.34
Son (n=106)	<i>df</i> = 1		1.70	0.63	2.66	0.45	1.85	0.60
Child was dewormed in the last 6 months								
No (n=105)	0.17	0.68	5.38	0.15	12.94	0.01**	4.87	0.18
Yes (n=116)	<i>df</i> = 1		3.69	0.30	8.29	0.04**	5.48	0.14

a WAZ (weight-for-age z-scores), HAZ (height-for-age z-scores), and WHZ (weight-for-height z-scores) are divided into 4 strata: i) below -2 ii) -2 to below -1 iii) -1 to below 0, and iv) 0 and above

Significant levels at * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4. Dunn's test of distributional differences in maternal decision-making across childhood anthropometric measures

		<i>RM-CM</i> ^a	<i>p</i>		<i>RM-CM</i>	<i>p</i>		<i>RM-CM</i>	<i>p</i>
Pooled (n=221)	WAZ ^b	below -2			-2 to below -1			-1 to below 0	
	below -2								
	-2 to below -1	-1.12	0.79						
	-1 to below 0	-0.25	1.00	1.39	0.50				
	0 and above	0.87	1.00	2.68	0.02**	1.61	0.32		
Sub-Strata									
Male-headed households (n=173)	WAZ	below -2			-2 to below -1			-1 to below 0	
	below -2								
	-2 to below -1	-0.79	1.00						
	-1 to below 0	0.13	1.00	1.45	0.44				
	0 and above	1.41	0.47	3.06	<0.01***	1.95	0.16		
Male-headed households (n=173)	WHZ	below -2			-2 to below -1			-1 to below 0	
	below -2								
	-2 to below -1	0.32	1.00						
	-1 to below 0	0.39	1.00	0.12	1.00				
	0 and above	1.22	0.67	1.86	0.19	2.20	0.08		
Highest asset tertile (n=70)	WHZ	below -2			-2 to below -1			-1 to below 0	
	below -2								
	-2 to below -1	-2.20	0.08						
	-1 to below 0	-1.98	0.14	0.64	1.00				
	0 and above	-1.24	0.65	1.94	0.16	1.76	0.24		
Lowest asset tertile (n=62)	WAZ	below -2			-2 to below -1			-1 to below 0	
	below -2								
	-2 to below -1	-0.05	1.00						
	-1 to below 0	0.57	1.00	0.95	1.00				

	0 and above	2.06	0.12	2.78	0.02**	2.15	0.10
Mother, normal BMI (n=146)	WAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	1.02	0.92				
	-1 to below 0	2.10	0.11	1.72	0.26		
	0 and above	2.31	0.06	1.96	0.15	0.55	1.00
Mother, BMI \geq 25 kg/m ² (n=43)	WAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	-2.15	0.09				
	-1 to below 0	-2.80	0.02**	-0.53	1.00		
	0 and above	-1.50	0.40	0.99	0.96	1.83	0.20
Mother 34 to 46 years old (n=74)	WAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	-1.01	0.94				
	-1 to below 0	-1.10	0.81	-0.02	1.00		
	0 and above	0.18	1.00	1.47	0.43	1.67	0.28
Mother 34 to 46 years old (n=74)	WHZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	0.11	1.00				
	-1 to below 0	0.02	1.00	-0.19	1.00		
	0 and above	0.26	1.00	0.27	1.00	0.69	1.00
Mother's education Lower than primary (n=42)	HAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	-1.58	0.34				
	-1 to below 0	1.39	0.49	2.70	0.02**		
	0 and above	-0.43	1.00	0.62	1.00	-1.36	0.52

Child 6 to 16 months old (n=64)	WAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	0.29	1.00				
	-1 to below 0	1.10	0.81	1.15	0.75		
	0 and above	2.37	0.05	2.87	0.01**	2.20	0.08
Child 6 to 16 months old (n=64)	WHZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	0.30	1.00				
	-1 to below 0	1.33	0.56	1.07	0.85		
	0 and above	2.40	<0.05**	2.30	0.07	2.44	<0.05**
Child 17 to 26 months old (n=79)	WAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	-1.87	0.19				
	-1 to below 0	-0.72	1.00	2.43	<0.05**		
	0 and above	-1.18	0.71	0.92	1.00	-0.90	1.00
Female child (n=115)	WAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	-0.69	1.00				
	-1 to below 0	0.29	1.00	1.58	0.34		
	0 and above	1.22	0.67	2.62	0.03**	1.39	0.50
Child was not dewormed (n=105)	HAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	-3.14	0.01**				
	-1 to below 0	-1.23	0.65	1.46	0.43		
	0 and above	0.33	1.00	2.83	0.01**	1.33	0.55

Child was dewormed (n=116)	HAZ	below -2		-2 to below -1		-1 to below 0	
	below -2						
	-2 to below -1	2.60	0.03**				
	-1 to below 0	1.76	0.24	-0.61	1.00		
	0 and above	0.08	1.00	-1.78	0.23	-1.24	0.65

a *RM-CM*: row mean minus column mean

b WAZ (weight-for-age z-scores), HAZ (height-for-age z-scores), and WHZ (weight-for-height z-scores) are divided into 4 strata: i) below -2 ii) -2 to below -1 iii) -1 to below 0, and iv) 0 and above

p-values are adjusted with Bonferroni corrections

Significant levels at ** $p < 0.05$, *** $p < 0.01$