

Table-S1: Information criterion values for the logistic and mixed effect logistic regression analysis for factors associated with stunting among under-five children, thinness among 5-19 years, obesity among adults (19-59 years) using the data from urban and rural areas in south India

	Stunting		Thinness		Obesity	
	AIC	BIC	AIC	BIC	AIC	BIC
Logistic regression	652.5	720.4	1114.1	1181.9	4542.2	4683.4
Mixed effect logistic regression	643.5	715.7	1094.2	1166.9	4508.2	4655.5

Table-S2: Factors associated with stunting among under-five children, thinness among 5-19 years, obesity among adults (19-59 years) through a univariate mixed-effect logistic regression analysis using the data from urban and rural areas in south India

Variable	Category	Under 5 children				5 - 19 Years				Adult (>19<60 years)			
		Stunting		OR (95% CI)	p-value	Thinness		OR (95% CI)	p-value	Obese		OR (95% CI)	p-value
		Yes (N=174) n (%)	No (N=343) n (%)			Yes (N=277) n (%)	No (N=669) n (%)			Yes (N=1630) n (%)	No (N=1807) n (%)		
Place of residence	Urban	143 (82.2)	280 (81.6)	1.09 (0.52 – 2.29)	0.827	254 (91.7)	547 (81.8)	3.43 (1.72 – 6.84)	<0.001*	1235 (75.8)	1356 (75)	1.03 (0.84 – 1.26)	0.782
	Rural	31 (17.8)	63 (18.4)	Ref	–	23 (8.3)	122 (18.2)	Ref	–	395 (24.2)	451 (25)	Ref	–
Age group in years	0 – 2	89 (51.1)	132 (38.5)	2.06 (1.19 – 3.57)	0.010*	–	–	–	–	–	–	–	–
	3 – 5	85 (48.9)	211 (61.5)	Ref	–	–	–	–	–	–	–	–	–
	5 – 9	–	–	–	–	81 (29.2)	183 (27.4)	Ref	–	–	–	–	–
	10 – 14	–	–	–	–	95 (34.3)	213 (31.8)	1.00 (0.61 - 1.66)	0.985	–	–	–	–
	15 – 19	–	–	–	–	101 (36.5)	273 (40.8)	0.84 (0.51 - 1.39)	0.497	–	–	–	–
	20 – 39	–	–	–	–	–	–	–	–	865 (53.1)	1212 (67.1)	Ref	–
	40 – 59	–	–	–	–	–	–	–	–	765 (46.9)	595 (32.9)	2.09 (1.75 - 2.48)	<0.001*
Gender	Male	95 (54.6)	172 (50.1)	1.40 (0.79 - 2.47)	0.245	188 (67.9)	321 (48)	2.73 (1.83 - 4.08)	<0.001*	521 (32)	663 (36.7)	0.78 (0.66 - 0.92)	0.003*
	Female	79 (45.4)	171 (49.9)	Ref	–	89 (32.1)	348 (52)	Ref	–	1108 (68)	1142 (63.3)	Ref	–

Religion	Hindu	139 (79.9)	259 (75.7)	Ref	–	225 (81.5)	557 (83.3)	Ref	–	1327 (81.5)	1555 (86.2)	Ref	–
	Muslim	19 (10.9)	54 (15.8)	0.50 (0.20 - 1.23)	0.133	36 (13.1)	73 (10.9)	1.41 (0.71 - 2.78)	0.321	203 (12.5)	151 (8.4)	1.81 (1.36 - 2.42)	<0.001*
	Christianity	16 (9.2)	29 (8.5)	1.29 (0.45 - 3.73)	0.641	15 (5.4)	39 (5.8)	0.89 (0.35 - 2.27)	0.810	99 (6.1)	97 (5.4)	1.21 (0.83 - 1.76)	0.330
	Own	103 (59.2)	225 (65.6)	Ref	–	172 (62.1)	448 (67)	Ref	–	1202 (73.7)	1212 (67.1)	Ref	–
	Rented/leased/others	71 (40.8)	118 (34.4)	1.53 (0.84 - 2.81)	0.166	105 (37.9)	221 (33)	1.33 (0.84 - 2.10)	0.220	428 (26.3)	595 (32.9)	0.68 (0.56 - 0.82)	<0.001*
Type of family	Nuclear	111 (63.8)	187 (54.5)	Ref	–	213 (76.9)	491 (73.4)	Ref	–	1106 (67.9)	1265 (70)	Ref	–
	Extended/three generation family	48 (27.6)	123 (35.9)	0.54 (0.28 - 1.04)	0.065	60 (21.7)	160 (23.9)	0.83 (0.49 - 1.40)	0.486	408 (25)	441 (24.4)	1.07 (0.87 - 1.31)	0.526
	Joint	15 (8.6)	33 (9.6)	0.65 (0.23 - 1.84)	0.413	4 (1.4)	18 (2.7)	0.40 (0.08 - 1.92)	0.251	116 (7.1)	101 (5.6)	1.37 (0.94 – 2.00)	0.104
Type of house	Pucca	105 (60.3)	251 (73.2)	Ref	–	173 (62.5)	416 (62.2)	Ref	–	1157 (71)	1190 (65.9)	Ref	–
	Mixed	61 (35.1)	84 (24.5)	2.48 (1.21 - 5.07)	0.013*	100 (36.1)	234 (35)	1.08 (0.68 - 1.71)	0.746	443 (27.2)	557 (30.8)	0.79 (0.65 – 0.96)	0.017*
	Kutcha	8 (4.6)	8 (2.3)	4.28 (0.81 - 22.49)	0.086	4 (1.4)	19 (2.8)	0.37 (0.07 - 1.91)	0.234	30 (1.8)	60 (3.3)	0.43 (0.24 - 0.75)	0.003*
Overcrowding	Not overcrowded	49 (28.2)	121 (35.3)	Ref	–	74 (26.7)	243 (36.3)	Ref	–	908 (55.7)	875 (48.4)	Ref	–
	Overcrowded	125 (71.8)	222 (64.7)	1.67 (0.88 - 3.16)	0.114	203 (73.3)	426 (63.7)	1.93 (1.19 - 3.12)	0.008*	722 (44.3)	932 (51.6)	0.71 (0.60 - 0.84)	<0.001*
Place of cooking	Separate kitchen	82 (47.1)	182 (53.1)	Ref	–	139 (50.2)	337 (50.4)	Ref	–	859 (52.7)	807 (44.7)	Ref	–
	No separate kitchen	92 (52.9)	161 (46.9)	1.48 (0.82 - 2.67)	0.193	138 (49.8)	332 (49.6)	1.03 (0.67 - 1.59)	0.899	771 (47.3)	1000 (55.3)	0.68 (0.58 - 0.81)	<0.001*
Cooking fuel	Gas	165 (94.8)	334 (97.4)	Ref	–	271 (97.8)	646 (96.6)	Ref	–	1598 (98)	1719 (95.1)	Ref	–
	Firewood/others	9 (5.2)	9 (2.6)	2.91 (0.64 - 13.29)	0.168	6 (2.2)	23 (3.4)	0.60 (0.16 - 2.32)	0.463	32 (2)	88 (4.9)	0.33 (0.20 - 0.55)	<0.001*
Source of water for drinking and cooking	Piped water into residence/ /Buying water with cans/ Water purifier in the house	161 (92.5)	310 (90.4)	Ref	–	268 (96.8)	615 (91.9)	Ref	–	1442 (88.5)	1559 (86.3)	Ref	–
	Public tap /Public well/bore/well on residence/plot	13 (7.5)	33 (9.6)	0.55 (0.18 - 1.65)	0.283	9 (3.2)	54 (8.1)	0.29 (0.11 - 0.80)	0.016*	188 (11.5)	248 (13.7)	0.80 (0.61 – 1.04)	0.090

Most common method of defecation	Use Toilet at Home	139 (79.9)	275 (80.2)	Ref	–	256 (92.4)	618 (92.4)	Ref	–	1549 (95)	1664 (92.1)	Ref	–
	Public / Community/Shared Toilet	5 (2.9)	10 (2.9)	0.98 (0.19 – 5.02)	0.981	10 (3.6)	20 (3)	1.23 (0.35 - 4.29)	0.748	33 (2)	47 (2.6)	0.74 (0.42 - 1.30)	0.296
	Open Field	30 (17.2)	58 (16.9)	0.98 (0.47 – 2.04)	0.949	11 (4)	31 (4.6)	1.01 (0.36 - 2.86)	0.982	48 (2.9)	96 (5.3)	0.47 (0.30 - 0.74)	0.001*
Method of garbage disposal	Panchayat/corporation garbage disposal services/Garbage dump/public pits	150 (86.2)	298 (86.9)	Ref	–	262 (94.6)	593 (88.6)	Ref	–	1394 (85.5)	1510 (83.6)	Ref	–
	Drainage/ Vacant/abandoned house/ Burning	13 (7.5)	23 (6.7)	1.22 (0.39 - 3.80)	0.726	5 (1.8)	37 (5.6)	0.22 (0.06 - 0.77)	0.018*	158 (9.7)	164 (9.1)	1.04 (0.77 - 1.40)	0.791
	No designated place	11 (6.3)	22 (6.4)	0.93 (0.29 - 2.95)	0.896	10 (3.6)	39 (5.8)	0.53 (0.19 - 1.49)	0.230	78 (4.8)	133 (7.4)	0.59 (0.41 - 0.85)	0.005*
Occupation code	Professional/ Semi-professional	–	–	–	–	–	1 (0.1)	–	–	43 (2.6)	50 (2.8)	1.09 (0.63 - 1.87)	0.767
	Clerk/ Skilled works/ Semi-skilled works	–	–	–	–	9 (3.2)	23 (3.4)	0.26 (0.02 - 3.40)	0.307	1259 (77.2)	1203 (66.6)	1.44 (1.13 - 1.84)	0.003*
	Unskilled worker	–	–	–	–	3 (1.2)	3 (0.4)	Ref	–	193 (11.8)	262 (14.5)	Ref	–
	Unemployed	–	–	–	–	2 (0.7)	7 (1.1)	0.16 (0.01 - 3.93)	0.262	43 (2.6)	81 (4.5)	0.69 (0.42 - 1.13)	0.140
	Student/Preschool	–	–	–	–	263 (94.9)	635 (95)	0.25 (0.02 - 2.56)	0.241	92 (5.6)	211 (11.7)	0.47 (0.33 - 0.69)	<0.001*
Literate (age> 7 years)	Illiterate	–	–	–	–	–	–	–	–	377 (23.1)	395 (21.9)	Ref	–
	Read	–	–	–	–	–	–	–	–	14 (0.9)	13 (0.7)	1.07 (0.42 - 2.76)	0.888
	Read & Write	–	–	–	–	–	–	–	–	1237 (75.9)	1398 (77.4)	0.86 (0.71 – 1.04)	0.129
	Preschool/Balwadi School	–	–	–	–	–	–	–	–	2 (0.1)	1 (0.1)	2.46 (0.14 - 43.57)	0.539
Wealth Index	Lowest	101 (58)	148 (43.1)	4.10 (1.83 - 9.17)	0.001*	148 (53.4)	317 (47.3)	1.43 (0.84 - 2.43)	0.185	587 (36)	880 (48.7)	0.45 (0.37 - 0.55)	<0.001*
	Middle	42 (24.2)	75 (21.9)	3.23 (1.33 - 7.87)	0.010*	61 (22.1)	169 (25.3)	0.94 (0.50 - 1.74)	0.833	393 (24.1)	424 (23.5)	0.67 (0.53 - 0.84)	0.001*
	Highest	31 (17.8)	120 (35)	Ref	–	68 (24.5)	183 (27.4)	Ref	–	650 (39.9)	503 (27.8)	Ref	–

*Significant at P – value < 0.05.