

### List of Supplementary tables

Supplementary table 1: Health post and child factors associated with referrals of 0 – 59 months sick young children in four regions of Ethiopia

Characteristics	Referral status of 0 – 59 days old sick young infants			Referral status of 2 – 59 months old children		
	Referred N=39 n (%)	Not referred N=190 n (%)	P-value	Referred N=78 n (%)	Not referred N=1045 n (%)	P-value
<i>The health post</i>						
Mean score of basic amenities						
0 to 33 percent	13 (24)	42 (76)	0.466	20 (13)	129 (87)	0.043
34 to 66 percent	9 (15)	50 (85)		19 (6)	292 (94)	
67 to 100 percent	17 (15)	98 (85)		39 (6)	624 (94)	
Mean score of basic equipment						
0 to 33 percent	2 (22)	7 (78)	0.825	3 (4)	73 (96)	0.512
34 to 66 percent	10 (19)	43 (81)		12 (8)	147 (92)	
67 to 100 percent	27 (16)	140 (84)		63 (7)	825 (93)	
Mean score of standard precaution						
0 to 33 percent	4 (9)	40 (91)	0.527	30 (8)	353 (92)	0.279
34 to 66 percent	14 (19)	59 (81)		31 (8)	355 (92)	
67 to 100 percent	21 (19)	91 (81)		17 (5)	337 (95)	
Rapid diagnostic test (RDT)						
0 to 33 percent	10 (17)	50 (83)	0.947	47 (9)	467 (91)	0.026
34 to 66 percent	0	0		0	0	
67 to 100 percent	29 (17)	140 (83)		31 (5)	578 (95)	
Mean score of essential medicines						
0 to 33 percent	1 (8)	11 (92)	0.026	17 (18)	77 (82)	0.001
34 to 66 percent	32 (21)	113 (79)		43 (6)	697 (94)	
67 to 100 percent	6 (8)	66 (92)		18 (6)	271 (94)	
Health post's overall service readiness index						
0 to 33 percent	0 (0)	1 (0)	0.737	7 (18)	31 (82)	0.193
34 to 66 percent	22 (19)	93 (81)		43 (7)	575 (93)	
67 to 100 percent	17 (15)	96 (85)		28 (6)	439 (94)	
Number of health extension worker per health post						

	1	2 (5)	39 (95)		20 (9)	196 (81)	
	2 or more	37 (20)	151 (80)	0.024	58 (6)	849 (94)	0.264
<i>Distance between health post and the nearest referral health centre</i>							
Distance to the next referral site <sup>b</sup>							
	0 - 8 kms	16 (21)	61 (79)				
	8.01 - 20 kms	10 (12)	71 (88)	0.554			
	>20 kms	13 (19)	57 (81)				
	0 - 8 kms				24 (7)	340 (93)	
	8.01 - 14 kms				25 (8)	301 (92)	0.699
	>14 kms				22 (6)	362 (94)	
<i>The child</i>							
Region							
	Amhara	3 (25)	9 (75)		34 (7)	428 (93)	
	Oromia	10 (13)	65 (87)	0.722	26 (7)	342 (93)	0.691
	SNNPR <sup>a</sup>	9 (21)	33 (79)		11 (8)	128 (92)	
	Tigray	17 (17)	83 (83)		7 (5)	147 (95)	
Age							
	1 <sup>st</sup> week	14 (24)	45 (76)				
	2 - 4 weeks	16 (16)	82 (84)	0.353			
	5 - 8 weeks	9 (13)	63 (87)				
	2 - 11 months				26 (8)	294 (92)	
	12 - 23 months				28 (8)	325 (92)	0.249
	24 - 59 months				24 (5)	426 (95)	
Sex							
	Boy	18 (15)	106 (85)	0.395	40 (7)	550 (93)	0.810
	Girl	21 (20)	84 (80)		38 (7)	495 (93)	
Disease classification							
	Non-severe illnesses not requiring referral	21 (12)	159 (88)	0.013	56 (5)	1023 (95)	0.001
	Severe illnesses requiring referral	18 (37)	31 (63)		22 (50)	22 (50)	

<sup>a</sup> SNNPR - Southern Nations, Nationalities, and Peoples Region

<sup>b</sup> GIS based data of distance from health post to health centre were missing for 0-59 days sick young infant (1) and 2-59 months sick children (49).

Supplementary table 2: Individual health post readiness factors associated with referrals of 0-59 months sick children in four regions of Ethiopia

Characteristics	Referral status of 0 – 59 days sick young infants			Referral status of 2 – 59 months old children		
	Referred N=39 n (%)	Not referred N=190 n (%)	P-value	Referred N=78 n (%)	Referred N=1045 n (%)	P-value
<i>Availability of basic amenities</i>						
Water source	Not available	15 (22)	0.296	30 (8)	356 (92)	0.558
	Available	24 (15)		48 (7)	689 (93)	
Electric power	Not available	18 (17)	0.886	51 (8)	602 (92)	0.257
	Available	21 (18)		27 (6)	443 (94)	
Facility owned toilet	Not available	6 (18)	0.880	14 (7)	207 (93)	0.981
	Available	33 (17)		64 (7)	838 (93)	
Facility owned landline or mobile phone	Not available	35 (19)	0.133	51 (6)	828 (94)	0.038
	Available	4 (10)		27 (11)	217 (89)	
<i>Availability of basic equipment</i>						
Thermometer	Not available	8 (14)	0.594	12 (5)	228 (95)	0.207
	Available	31 (18)		66 (8)	817 (92)	
Child weight scale	Not available	5 (13)	0.526	20 (9)	214 (91)	0.388
	Available	34 (18)		58 (7)	831 (93)	
Stethoscope	Not available	18 (19)	0.709	35 (8)	399 (92)	0.336
	Available	21 (16)		43 (6)	646 (94)	
MUAC tape measure	Not available	1 (100)	0.040	0 (0)	14 (100)	0.701
	Available	38 (17)		78 (7)	1031 (93)	
<i>Availability diagnostics</i>						
Rapid diagnostic test (RDT)	Not available	10 (17)	0.947	47 (9)	467 (91)	0.026
	Available	29 (17)		31 (5)	578 (95)	

<i>Availability of essential medicines</i>							
Vitamin A	Not available	9 (27)	25 (73)	0.211	11 (5)	207 (95)	0.214
	Available	30 (15)	165 (85)		67 (7)	838 (93)	
Amoxicillin	Not available	6 (14)	36 (86)	0.745	28 (15)	159 (85)	0.001
	Available	33 (18)	154 (82)		50 (5)	886 (95)	
Gentamycin	Not available	20 (14)	127 (86)	0.201			
	Available	19 (23)	63 (77)				
Tetracycline eye ointment	Not available	26 (19)	110 (81)	0.457	46 (8)	567 (92)	0.554
	Available	13 (14)	80 (86)		32 (6)	478 (94)	
Oral rehydration solution (ORS)	Not available	2 (13)	13 (87)	0.627	10 (17)	48 (83)	0.048
	Available	37 (17)	177 (83)		68 (6)	997 (94)	
Zinc-ORS	Not available				69 (7)	947 (93)	0.608
	Available				9 (8)	98 (92)	
Zinc	Not available				16 (9)	152 (91)	0.331
	Available				62 (7)	893 (93)	
Coartem	Not available	18 (20)	71 (80)	0.494	47 (9)	507 (91)	0.087
	Available	21 (15)	119 (85)		31 (5)	535 (95)	
Plumpy Nut	Not available	8 (23)	27 (77)	0.404	30 (8)	372 (92)	0.688
	Available	31 (16)	163 (84)		48 (7)	673 (93)	
BP100	Not available	38 (17)	180 (83)	0.012	77 (7)	993 (93)	0.107
	Available	1 (9)	10 (91)		1 (2)	52 (98)	