

Appendix 8. L, M, and S parameters and z scores for head circumference for age: girls 0 to 60 months.

Age (M)	L	M	S	-3	-2	-1	0	1	2	3
0	-2.98265	34.81456	0.0474	31.04717	32.02984	33.31147	34.81456	36.63018	38.90985	41.48556
1	-2.83494	36.09895	0.0471	32.1899	33.21562	34.5472	36.09895	37.95734	40.2627	42.82493
2	-2.68381	37.35358	0.0467	33.30553	34.37422	35.75496	37.35358	39.25169	41.5785	44.12403
3	-2.52669	38.55286	0.0463	34.37072	35.4818	36.91016	38.55286	40.48629	42.82844	45.35165
4	-2.3623	39.67725	0.0459	35.36772	36.52021	37.99404	39.67725	41.64067	43.99101	46.48518
5	-2.19058	40.71267	0.0455	36.2839	37.47643	38.99306	40.71267	42.70023	45.05125	47.50962
6	-2.01212	41.65142	0.0451	37.11245	38.3434	39.89985	41.65142	43.65715	46.00159	48.4181
7	-1.82796	42.49076	0.0447	37.85109	39.11863	40.71172	42.49076	44.50881	46.83998	49.20961
8	-1.63905	43.23235	0.0443	38.50148	39.80374	41.43024	43.23235	45.25725	47.56928	49.88813
9	-1.44718	43.88116	0.0439	39.06844	40.40347	42.06019	43.88116	45.90799	48.19606	50.46162
10	-1.2549	44.44473	0.0436	39.5593	40.92503	42.6088	44.44473	46.46926	48.72978	50.94105
11	-1.06452	44.93179	0.0432	39.98243	41.37674	43.08445	44.93179	46.95049	49.18097	51.3382
12	-0.87816	45.35104	0.0428	40.34615	41.76683	43.4955	45.35104	47.36103	49.55996	51.66432
13	-0.69783	45.71075	0.0424	40.65839	42.10317	43.84989	45.71075	47.70978	49.87646	51.9299
14	-0.52453	46.01849	0.0420	40.92619	42.3928	44.15484	46.01849	48.00478	50.13905	52.14385
15	-0.35914	46.28131	0.0416	41.15609	42.64229	44.41709	46.28131	48.25351	50.3557	52.31435
16	-0.20246	46.50579	0.0413	41.35416	42.85775	44.6429	46.50579	48.46294	50.53372	52.4489
17	-5.51E-02	46.69772	0.0409	41.52573	43.04453	44.83781	46.69772	48.63921	50.67956	52.55402
18	8.23E-02	46.86248	0.0406	41.6757	43.20758	45.00693	46.86248	48.78801	50.79915	52.63571
19	0.209138	47.0049	0.0402	41.80851	43.35136	45.15484	47.0049	48.91441	50.89778	52.69931
20	0.325052	47.1289	0.0399	41.92767	43.47943	45.28527	47.1289	49.02252	50.97967	52.74896
21	0.43	47.23758	0.0395	42.03593	43.59461	45.40118	47.23758	49.11559	51.0481	52.78783
22	0.524061	47.33335	0.0392	42.13539	43.69907	45.50484	47.33335	49.19611	51.10553	52.81823
23	0.607376	47.41826	0.0389	42.22776	43.7946	45.59818	47.41826	49.2662	51.15406	52.84211

Source: El Mouzan MI, Shaffi A, Al Salloum A, Alqurashi MM, Al Herbish A, Al Omer A. Z-score growth reference data for Saudi preschool children. Ann Saudi Med 2017; 37(1): 10-15.

24	0.679819	47.49464	0.0386	42.31507	43.8833	45.68341	47.49464	49.32827	51.19615	52.86185
25	0.7411	47.56498	0.0383	42.3995	43.96742	45.76289	47.56498	49.38493	51.23444	52.88011
26	0.791095	47.63173	0.0380	42.48315	44.04915	45.83894	47.63173	49.43872	51.27153	52.89943
27	0.829902	47.69701	0.0377	42.56778	44.13038	45.91359	47.69701	49.49185	51.30962	52.92197
28	0.857865	47.7625	0.0375	42.65466	44.21253	45.98841	47.7625	49.54602	51.35041	52.94932
29	0.875564	47.8294	0.0375	42.74458	44.29656	46.0645	47.8294	49.60244	51.39504	52.98251
30	0.883736	47.8986	0.0369	42.83802	44.38314	46.14268	47.8986	49.66204	51.44434	53.02223
31	0.883204	47.9707	0.0367	42.93517	44.47266	46.2235	47.9707	49.72538	51.49881	53.06884
32	0.874863	48.04581	0.0365	43.0358	44.56506	46.30699	48.04581	49.79255	51.55844	53.12218
33	0.859671	48.12375	0.0362	43.1394	44.66	46.39296	48.12375	49.86332	51.62287	53.18172
34	0.838675	48.20408	0.0361	43.2453	44.75694	46.48095	48.20408	49.9372	51.69147	53.24667
35	0.813025	48.28625	0.0359	43.3527	44.85527	46.57042	48.28625	50.01356	51.76346	53.31603
36	0.783993	48.36948	0.0357	43.46063	44.95413	46.6606	48.36948	50.09151	51.83777	53.38851
37	0.752983	48.45285	0.0355	43.568	45.05257	46.75059	48.45285	50.17001	51.91315	53.46261
38	0.721516	48.5352	0.0353	43.67353	45.14943	46.83929	48.5352	50.24777	51.98808	53.53653
39	0.691213	48.61518	0.0351	43.77576	45.24337	46.9254	48.61518	50.3233	52.06081	53.60824
40	0.663087	48.69201	0.0350	43.87386	45.33363	47.00817	48.69201	50.39571	52.13033	53.6765
41	0.637269	48.76581	0.0348	43.96798	45.42034	47.08773	48.76581	50.4651	52.19669	53.74136
42	0.613841	48.83694	0.0347	44.05853	45.5039	47.16446	48.83694	50.53184	52.26023	53.80316
43	0.592843	48.90564	0.0345	44.14577	45.58456	47.23861	48.90564	50.59613	52.32118	53.86208
44	0.574156	48.9722	0.0344	44.23008	45.66267	47.31048	48.9722	50.65828	52.37983	53.91843
45	0.557457	49.03707	0.0342	44.312	45.7387	47.38054	49.03707	50.71875	52.43667	53.97276
46	0.542454	49.10055	0.0341	44.39192	45.81302	47.44909	49.10055	50.77782	52.49201	54.02542
47	0.528927	49.16293	0.0390	44.47023	45.88596	47.51645	49.16293	50.8358	52.54616	54.07672
48	0.516699	49.22464	0.0380	44.54742	45.95798	47.58307	49.22464	50.89311	52.59957	54.12714
49	0.505596	49.28618	0.0370	44.62403	46.02962	47.64943	49.28618	50.95026	52.65275	54.17722

Source: El Mouzan MI, Shaffi A, Al Salloum A, Alqurashi MM, Al Herbish A, Al Omer A. Z-score growth reference data for Saudi preschool children. Ann Saudi Med 2017; 37(1): 10-15.

50	0.495626	49.3475	0.0350	44.70009	46.10086	47.71552	49.3475	51.00716	52.70559	54.22681
51	0.486874	49.40824	0.0334	44.77531	46.17141	47.78101	49.40824	51.06343	52.75769	54.27549
52	0.479113	49.4683	0.0333	44.84967	46.2412	47.84581	49.4683	51.11899	52.80894	54.32318
53	0.472116	49.52753	0.0331	44.92309	46.31013	47.90979	49.52753	51.17366	52.85922	54.36975
54	0.465735	49.58562	0.0330	44.99537	46.37795	47.97267	49.58562	51.2271	52.90815	54.41484
55	0.459882	49.64214	0.0329	45.06622	46.44432	48.03405	49.64214	51.27888	52.95527	54.45796
56	0.454344	49.69726	0.0327	45.13585	46.50943	48.09411	49.69726	51.32914	53.00074	54.4993
57	0.448966	49.75153	0.0326	45.20476	46.57381	48.15338	49.75153	51.37848	53.0452	54.53954
58	0.4437	49.80531	0.0325	45.27329	46.63777	48.21221	49.80531	51.42728	53.08906	54.57911
59	0.438544	49.85874	0.0323	45.34155	46.70144	48.27072	49.85874	51.47568	53.13246	54.61816
60	0.433541	49.91208	0.0322	45.40974	46.76506	48.32917	49.91208	51.52396	53.17569	54.65699

Source: El Mouzan MI, Shaffi A, Al Salloum A, Alqurashi MM, Al Herbish A, Al Omer A. Z-score growth reference data for Saudi preschool children. Ann Saudi Med 2017; 37(1): 10-15.