

Results

The results of our study are shown in the following tables:

- Table (II)** Summarizes the clinical data of the control group.
- Table (III)** Summarizes the clinical data of the patients.
- Table (IV)** Shows the serum concentrations of serum zinc, copper, manganese, chromium, and magnesium of the control subjects.
- Table (V)** Shows the serum concentrations of cobalt, nickel, lead and cadmium of the control subjects.
- Table (VI)** Shows the serum concentrations of zinc, copper, manganese, chromium and magnesium of the patients
- Table (VII)** Shows the serum concentrations of cobalt, nickel, lead and cadmium of the patients.
- Table (VIII)** Summarizes the results of the statistical analysis.

Table (II): Clinical data of the control group

Case No.	Sex	Age (months)	Weight (kg)	Length (cm)
1	♂	8	9.0	73
2	♂	4	6.0	60
3	♂	9	9.0	74
4	♂	18	11.0	81
5	♂	12	10.0	77
6	♀	6	8.0	71
7	♀	18	11.0	81
8	♀	4	7.0	69
9	♀	17	11.5	81
10	♀	12	10.0	76

Table (III): Clinical data of the patients

Case No.	Sex	Age (months)	Weight (kg)	Length (cm)	Midarm circum. (cm)	Classification
1	♂	3	3.0	51	8	Severe Marasmus
2	♂	18	7.5	75	12	Moderate Marasmus
3	♂	12	7.5	70	11	Moderate Marasmus
4	♂	8	6.5	64	10	Moderate Marasmus
5	♀	13	6.5	65	10	Severe Marasmus
6	♂	21	5.5	70	11	Severe Marasmus
7	♀	5	4.0	53	9	Severe Marasmus
8	♀	18	6.5	71	10	Severe Marasmus
9	♂	3	3.5	57	8	Severe Marasmus
10	♂	12	7.5	66	11	Moderate Marasmus
11	♀	11	5.0	60	10	Severe Marasmus
12	♂	9	5.5	62	9	Severe Marasmus
13	♀	20	7.0	78	11	Severe Marasmus
14	♂	20	8.5	78	11	Severe Kwashiorkor
15	♂	19	8.0	75	11	Moderate Kwashiorkor
16	♂	18	8.0	70	11	Severe Kwashiorkor
17	♂	19	9.0	79	15	Moderate Kwashiorkor
18	♀	18	7.0	70	10	Severe Kwashiorkor
19	♂	18	8.5	71	12	Moderate Kwashiorkor
20	♀	16	7.3	73	12	Moderate Kwashiorkor
21	♂	18	9.0	75	13	Moderate Kwashiorkor
22	♂	18	6.0	65	9	Severe Kwashiorkor
23	♂	15	6.4	63	10	Moderate Kwashiorkor
24	♀	14	6.5	65	9	Moderate Kwashiorkor
25	♀	9	5.5	60	9	Severe Kwashiorkor

Table (IV) Serum zinc, copper, manganese, chromium and magnesium in the control subjects.

	Zn (mg/L)	Cu (mg/L)	Mn (ug/L)	Cr (ug/L)	Mg (mg/L)
1	1.091	0.402	18.0	0.9	21.78
2	0.783	0.313	15.0	0.9	18.06
3	0.723	2.047	6.0	14.0	20.08
4	0.544	0.585	10.0	13.0	10.00
5	0.457	0.425	17.0	26.0	18.30
6	0.509	0.494	6.0	9.0	9.50
7	0.500	0.945	8.0	0.9	16.80
8	0.739	0.885	4.0	1.0	18.43
9	0.401	0.230	8.0	0.9	25.50
10	0.437	0.115	6.0	0.9	25.87
Mean	0.6183	0.6441	9.8000	6.750	18.4320
S.D	0.2144	0.5588	5.0500	8.637	5.0700

Table (V): Serum cobalt, nickel, lead and cadmium in the control subjects.

	Co (ug/L)	Ni (ug/L)	Pb (ug/L)	Cd (ug/L)
1	0.9	47.0	260.0	14.0
2	0.9	9.0	330.0	18.0
3	7.0	6.0	50.0	0.9
4	6.0	11.0	70.0	3.0
5	19.0	20.0	60.0	2.0
6	2.0	0.9	0.9	0.9
7	*	29.0	30.0	0.9
8	26.0	71.0	70.0	0.9
9	30.0	42.0	160.0	0.9
10	15.0	6.0	80.0	0.9
Mean	11.8670	24.1900	111.0900	4.2400
S.D.	11.0976	22.7990	106.4010	6.3070

* The sample taken from this child was not sufficient to perform this particular analysis.

Table (VI): Serum zinc, copper, manganese, chromium and magnesium in the patients

	Zn (mg/L)	Cu (mg/L)	Mn (ug/L)	Cr (ug/L)	Mg (mg/L)
1	*	0.074	10.0	31.0	11.30
2	0.366	0.211	64.0	15.0	10.88
3	0.267	0.274	68.0	15.0	12.64
4	0.161	0.285	56.0	23.0	10.29
5	0.177	0.266	52.0	10.0	11.15
6	0.144	0.165	55.0	15.0	13.60
7	0.159	0.066	44.0	2.0	12.25
8	0.165	0.303	63.0	64.0	3.43
9	0.159	0.088	19.0	25.0	6.17
10	0.123	0.051	32.0	46.0	7.10
11	0.243	0.007	0.9	0.9	17.72
12	0.288	0.066	8.0	11.0	17.48
13	0.200	0.136	5.0	0.9	21.46
14	*	0.053	5.0	46.0	11.90
15	0.383	0.123	58.0	40.0	10.75
16	0.097	0.066	24.0	25.0	11.48
17	0.165	0.037	7.0	17.0	12.80
18	0.352	0.143	47.0	81.0	2.13
19	0.170	0.127	39.0	83.0	2.38
20	0.228	0.116	22.0	69.0	5.68
21	0.128	0.077	23.0	40.0	5.80
22	0.358	0.661	0.9	62.0	17.31
23	0.089	0.008	7.0	0.9	15.80
24	0.142	0.024	0.9	0.9	17.00
25	0.163	0.126	6.0	1.0	7.74
Mean	0.2055	0.1421	28.6680	28.9840	11.0500
S.D	0.0889	0.1387	23.5960	26.2300	5.1077

* The sample taken from this child was not sufficient to perform this particular analysis.

Table (VII): Serum cobalt, nickel, lead and cadmium in the patints.

	Co (ug/L)	Ni (ug/L)	Pb (ug/L)	Cd (ug/L)
1	1.0	10.8.0	*	0.9
2	8.0	174.0	49.0	0.9
3	28.0	100.0	88.0	0.9
4	27.0	81.0	98.0	0.9
5	*	49.0	110.0	0.9
6	0.9	49.0	500.0	3.0
7	0.9	45.0	*	4.0
8	0.9	250.0	50.0	0.9
9	0.9	114.0	50.0	0.9
10	0.9	163.0	0.9	8.0
11	0.9	75.0	250.0	6.0
12	0.9	5.0	50.0	0.9
13	*	22.0	90.0	0.9
14	0.9	90.0	*	0.9
15	29.0	256.0	36.0	0.9
16	0.9	86.0	300.0	1.0
17	0.9	62.0	370.0	0.9
18	0.9	0.9	50.0	5.0
19	0.9	244.0	50.0	1.0
20	0.9	165.0	10.0	3.0
21	0.9	79.0	0.9	0.9
22	0.9	97.0	390.0	12.0
23	0.9	3.0	350.0	4.0
24	0.9	81.0	460.0	4.0
25	0.9	0.9	0.9	11.0
Mean	4.7480	95.9920	152.4410	2.9480
S.D	9.3300	75.5600	164.4910	3.2360

* The sample taken from this child was not sufficient to perform this particular analysis.

Table (VIII): Results of the statistical analysis

	Degree of Freedom	Critical value ($P < 0.05$)	t	Significance
Zn	31	2.0395	7.90000	Significant
Cu	33	2.0345	4.26080	Significant
Mn	33	2.0345	2.48000	Significant
Cr	33	2.0345	2.60400	Significant
Mg	33	2.0345	3.78000	Significant
Co	30	2.0423	1.77800	Non Significant
Ni	33	2.0345	2.92800	Significant
Pb	30	2.0423	0.72544	Non Significant
Cd	33	2.0345	0.80790	Non Significant