

Results

Results

A- Results of anthropometric study of children :

The study concluded 50 obese children, they were 20 males and 30 females, their ages ranged from 6 to 7.2 years with a mean age $6.6 \pm .23$ years . Results of the anthropometry (weight , height , head circumference, chest circumference, midarm circumference, triceps and subscapular skinfold thickness) for the obese children are shown in Table (1) and those for the control children in Table (2) .

There were significant differences in mean values of all parameters between the obese and the control group Table (3) .

The sex difference in anthropometric measurements is shown in Table (4) . The studied group was divided into 2 subgroups, the super-obese children (28 child) and the obese children (22 child) , the comparison between mean values of their anthropometric measurements revealed statistically significant differences in all variables except head circumference Table (5) .

B - Results of clinical examination :

The mean systolic blood pressure of obese children was 122.2 (± 16.90) mm Hg . And their mean diastolic blood pressure 78.1 (± 4.61) mm Hg . while they were 112.7 (± 6.48) mm Hg . and 70.7 (± 3.78) mm Hg . respectively in the control group Table (6) , all the studied children (both obese and control) were clinically free on complete physical examination .

C - Results of I.Q. , school achievement tests :

The obese children scored I.Q. ranging from 52 to 114 with a mean of 89.1 ($\pm$ 13.59) Table (7) in comparison to (63 to 114) with a mean of 92.46 ($\pm$ 10.52) of the control group Table (8). the school achievement test results are shown also in Table (7), (8) .

Table (9) shows comparison of mean IQ , school achievement results between obese and control children, the control children had higher scores than the obese children but the difference was insignificant ($P > .05$) .

Obese males got insignificantly higher I.Q. and insignificantly lower school achievement scores than obese females, Table (10) .

Regarding the type of school the pupils of private schools had higher I.Q and school achievement results than the pupils of governmental schools Table (11) .

The superobese children got less scores in I.Q . and school achievement tests than the obese but the difference was statistically insignificant ($P > .05$) Table (12) .

Correlation between I.Q and school achievement is $r = ".26"$ this correlation is statistically significant ($P < .05$) .

Table (1) . Results of anthropometric measurements of obese children .

Serial no.	Sex	Age	Wt.	Ht.	H. C.	Ch.C.	M.C.	Tri . sk. Thick.	Sub .Sk. Thick.	Syst. B . P.	Diast. B. P
1 -	♀	6. 4	29	122	54	62	19.5	16	12	120	80
2 -	♀	6. 7	31.5	121	53	64.5	22.5	21	16	130	90
3 -	♀	6. 6.	27.5	117.5	52	61.5	20.5	16	12	120	70
4 -	♀	6. 2.	33.5	122	53.5	71	21.5	17	13	130	80
5 -	♀	6. -	35.5	119.5	51	76.5	25.5	25	26	130	80
6 -	♀	6. 6.	29.5	122	50.5	63	19	20	12	120	80
7 -	♀	7. -	32	119	50.5	68.5	22	17	15	110	70
8 -	♀	6. 9.	30	121.5	52	66	22.5	15	13	120	70
9 -	♀	6. -	24	113	51	56	19	15	10	120	80
10 -	♀	6. -	26.5	114	49	66	22	16	17	130	80
11 -	♀	6.3	31	121.5	54	69	22.5	15	12	130	80
12 -	♀	6.1	29	121	51	64	20	16	14	120	80
13 -	♀	7. -	29	116	51.5	66.5	22	20	15	110	70
14 -	♀	6.7	29	116.5	51.5	60.5	20	16	12	120	80
15 -	♀	6.10	28	123.5	52.5	60	19.5	18	11	130	80
16 -	♀	6.6	36	129	52.5	68.5	23	20	20	130	85
17 -	♀	6.5	30	121.5	49.5	63	22.5	18	15	130	80
18 -	♀	6.6	29	116	51	62.5	21	17	15	120	80
19 -	♀	7. -	32.5	122	51	66	20.5	18	15	120	80
20 -	♀	6.8	34	121.5	52	72	25.5	25	26	125	80
21 -	♀	6.7	34	121.5	50.5	68.5	23	22	20	125	80
22 -	♀	6. -	30	121	51	68.5	22.5	20	20	140	70
23 -	♀	6.8	28.5	124	52	62	22	20	13	140	80
24 -	♀	6.10	33	121	51.5	70.5	22	15	15	140	80
25 -	♀	7.2	29	119.5	49	59.5	20	16	12	120	80

WT. = Weight.

HT. = Height.

H.C. = Head circumference.

CH.C. = Chest circumference.

Syst B. P. = Systolic blood pressure

M.C. = Midarm circumference.

Tri. SK. Thick. = Triceps skinfold thickness

Sub. SK. Thick. = Subscapular skinfold thickness

Diast. B.P. = Diastolic blood pressure

Table (1) Continued

Serial no.	Sex	Age	Wt.	Ht.	H. C.	Ch.C.	M.C.	Tri . sk. Thick.	Sub .Sk. Thick.	Syst. B . P.	Diast. B. P
26 -	♀	7.2	39	125	49	76	26.5	27	23	130	70
27 -	♀	7.0	29	123	49.5	64.5	22	22	17	120	80
28 -	♀	6.5	32	122.5	52	68	23	20	20	120	80
29 -	♀	6.5	26.5	118	50	61.5	20	15	12	120	80
30 -	♀	6.10	29	123.5	52	63	21	19	17	110	70
31 -	♂	6.4	34	121.5	51.5	71.5	24	22	20	120	80
32 -	♂	6.8	31.5	124	54	67	21	18	14	120	80
33 -	♂	6.9	33	129	53	70	23	20	13	120	80
34 -	♂	6.7	29.5	122	51	64	20.5	17	12	120	70
35 -	♂	6.8	30	124	53	63	20	15	13	140	80
36 -	♂	6.7	29.5	116	53	68	21.5	15	13	140	80
37 -	♂	6.1	29.5	118	52.5	64	20.5	17	12	120	80
38 -	♂	6.3	28	117	52	60.5	21.5	15	13	120	80
39 -	♂	6.4	29	122	53	62	20	15	12	130	80
40 -	♂	6.10	29	120.5	52	66	22	15	12	120	80
41 -	♂	6.8	29	123	57	60	20.5	13	10	120	80
42 -	♂	7.1	37	125	54	76	25	23	24	130	80
43 -	♂	6.7	30	124	51.5	66.5	22	16	15	120	80
44 -	♂	6.8	29.5	123	51	62	20.5	16	12	120	80
45 -	♂	6.5	29	122.5	53	65	21.5	16	13	110	70
46 -	♂	6.3	31	121.5	54	69	22.5	15	12	130	80
47 -	♂	7.0	35	125	51	71	22	16	12	140	80
48 -	♂	6.6	29	120	52	66	22	13	11	130	80
49 -	♂	6.3	29.5	120	53	62.5	21.5	17	14	120	70
50 -	♂	6.7	27	123	52.5	64.5	21.5	15	11	110	70

Table (2) . Results of anthropometric measurements of controls .

Serial no.	Sex	Age	Wt.	Ht.	H.C	Ch.C.	M.C.	Tri . sk. Thick.	Sub .Sk. Thick.	Syst. B . P.	Diast. B. P
1 -	♀	6.0	20	115.5	49	57	17	7	6	110	70
2 -	♀	6.4	24	122.5	51.5	59.5	17.5	10	8	110	70
3 -	♀	6.4	23	121.5	52.5	57.5	17	12	5	110	60
4 -	♀	6.5	22.5	123	49.5	58.5	17	9	6	110	70
5 -	♀	6.4	21.5	115	48	56.5	19.5	14	10	100	70
6 -	♀	6.4	21.5	118	51	56.5	17	11	7	120	70
7 -	♀	6.5	21	112.5	50.5	57.5	19	13	11	110	70
8 -	♀	6.5	23	117.5	50	60.5	18	12	8	100	70
9 -	♀	6.5	22.5	122	49.5	57	16.5	7	5	100	70
10 -	♀	6.5	22	120.5	51	57	17	6	5	120	70
11 -	♀	6.5	19.5	112.5	50	56	17	13	7	110	75
12 -	♀	6.7	23.5	120.5	51.5	58.5	19	13	6	110	70
13 -	♀	6.7	22.5	121	51	58	17	10	7	110	70
14 -	♀	6.8	20	120	50	53	16	6	4	125	70
15 -	♀	6.10	23	121.5	49.5	54.5	18.5	8	7	110	70
16 -	♀	6.8	25	124.5	50	60.5	19	11	10	110	70
17 -	♀	6.8	22	114	49	58.5	19.5	15	11	130	80
18 -	♀	6.7	22.5	114	52.5	59	19	11	11	110	70
19 -	♀	6.7	20.5	120	50	57	16.5	6	6	110	70
20 -	♀	6.8	21.5	119	49.5	56	18	7	4	120	70
21 -	♀	6.9	24	121	49	56.5	19	10	6	120	70
22 -	♀	6.6	22.5	115	50	59	18	10	7	110	60
23 -	♀	6.8	20	117	52.5	54	17	8	6	110	70
24 -	♀	6.8	22.5	118.5	50	56	17	9	5	110	70
25 -	♀	7.0	21.5	117.5	52	59	16	8	8	120	70

Table (2) . Continued

Serial no.	Sex	Age	Wt.	Ht.	H.C.	Ch.C.	M.C.	Tri . sk. Thick.	Sub .Sk. Thick.	Syst. B . P	Diast. B . P
26 -	♀	7.1	19	116.5	49	54.5	16	6	6	110	70
27 -	♀	7.0	19	112.5	49.5	54.5	16	10	5	110	70
28 -	♀	6.9	21	119	50	54.5	16.5	7	6	120	70
29 -	♀	6.8	22.5	116	50	60.5	17.5	10	6	110	70
30 -	♀	6.8	20	115.5	50.5	57	17	7	7	120	70
31 -	♂	6.5	25	121.5	52	61	20	11	6	110	70
32 -	♂	6.4	21	115	52	56.5	16.5	6	4	110	70
33 -	♂	6.7	22.5	125	52	57.5	16.5	5	4	110	70
34 -	♂	6.8	23	122.5	51.5	60	17	6	4	110	70
35 -	♂	6.7	22.5	118	51	55.5	18	7	5	110	70
36 -	♂	6.5	21.5	117	50	59	17.5	8	5	110	70
37 -	♂	6.5	20	121	51	57	16.5	5	4	120	80
38 -	♂	6.5	29	129	52	64	21.5	13	10	110	70
39 -	♂	6.3	21.5	115	52	59.5	16	9	6	120	80
40 -	♂	6.7	24.5	126	51.5	60	18	7	6	110	70
41 -	♂	6.10	23	125	51.5	59.5	17	4	4	110	70
42 -	♂	6.8	27	124	50	61	18.5	6	5	110	70
43 -	♂	6.6	21	112.5	49.5	58.5	17.5	6	4	110	70
44 -	♂	6.11	20	116	51.5	55	16	8	5	120	80
45 -	♂	6.0	22	118.5	51	57.5	18	7	4	130	80
46 -	♂	6.5	20	119	50	56	16	5	4	110	70
47 -	♂	6.7	22.5	119	52	55	18	7	4	110	70
48 -	♂	6.5	29	123	54.5	62	20	9	7	120	70
49 -	♂	6.11	24	122	53	61.5	18	5	4	110	70
50 -	♂	7.0	22.5	130	50.5	56	17	6	5	110	70

Table (3) . Mean values of anthropometric measurements of the obese and control children .

	Obese N = 50	Controls N = 50	P .	
1- Weight (kg)	30.51 $\pm$ 2.88	22.29 $\pm$ 2.14	.00005 *	
2- Height (cm)	121.20 $\pm$ 3.24	117.25 $\pm$ 14.98	.0358 *	
3- H. C. (cm)	51.87 $\pm$ 1.53	50.72 $\pm$ 1.27	.00004 *	
4- Ch. C. (cm)	65.75 $\pm$ 4.45	57.71 $\pm$ 2.34	.00001 *	
5- M. C. (cm)	21.71 $\pm$ 1.63	17.57 $\pm$ 1.24	.00005 *	
6- Tri. Sk. Thick . (mm)	17.72 $\pm$ 3.16	8.52 $\pm$ 2.72	.00001 *	
7- Sub. Sk Thick (mm)	14.76 $\pm$ 3.99	6.12 $\pm$ 2.01	.00003 *	

* = Significant .

H.C. = Head circumference .
 CH.C. = Chest circumference .
 M.C. = Midarm circumference .
 Tri. SK. Thick . = Triceps skinfold thickness
 Sub. SK . Thick . = Subscapular skinfold thickness .

Table (4) . Anthropometric measurements of female and male obese children .

	Obese females N=30 Mean ($\pm$ S. D.)	Obese males N=20 Mean ($\pm$ S. D.)	P .
1- Weight (kg)	30.55 $\pm$ 3.16	30.45 $\pm$ 2.48	.4529
2- Height (cm)	120.63 $\pm$ 3.33	122.05 $\pm$ 2.99	.0659
3- H. C. (cm)	51.31 $\pm$ 1.37	52.70 $\pm$ 1.39	.00005 *
4- Ch. C. (cm)	65.63 $\pm$ 4.75	65.92 $\pm$ 4.07	.4116
5- M. C. (cm)	21.75 $\pm$ 1.86	21.65 $\pm$ 1.27	.4175
6- Tri. Sk. Thick . (mm)	18.56 $\pm$ 3.25	16.45 $\pm$ 2.60	.0009 *
7- Sub. Sk. Thick (mm)	15.66 $\pm$ 4.24	13.40 $\pm$ 3.21	.0241 *

* = Significant .

Table 5 : Mean values of anthropometric measurements of superobese & obese children .

	Superobese N = 28 Mean ($\pm$ S. D.)	obese N= 20 Mean ($\pm$ S. D.)	P .
1- Weight (kg)	33.12 $\pm$ 2.77	28.45 $\pm$ 1.27	.00003 *
2- Height (cm)	121.91 $\pm$ 3.20	120.29 $\pm$ 3.13	.0402 *
3- Ch. C. (cm)	68.30 $\pm$ 3.88	62.50 $\pm$ 2.65	.00001 *
4- H. C. (cm)	51.83 $\pm$ 1.64	51.90 $\pm$ 1.64	.4374
5- M. C. (cm)	22.48 $\pm$ 1.67	20.72 $\pm$.92	.00002 *
6- Tri. Sk. Thick (mm)	18.92 $\pm$ 3.39	16.18 $\pm$ 2.08	.00007 *
7- Sub. Sk. Thick (mm)	16.50 $\pm$ 4.37	12.54 $\pm$ 1.84	.00001 *

* = Significant .

Table (6) . Blood pressure of the obese and control children

	Obese (N = 50)	Controls (N = 50)	P .
Systolic B. P.	122.20 + 16.90	112.70 + 6.84	.00001 *
Diastolic B. P.	78.10 + 4.61	70.70 + 3.78	.00001 *

* = Significant .

Table (7) Results of raw score, I.Q, T. score and scholastic a chievement of obese children .

Serial no.	Raw score	IQ'	T.score	Scholastic achievement
1 -	69	112	59	9.8
2 -	54	90	45	9.46
3 -	54	90	45	9.8
4 -	53	89	44	9.8
5 -	42	73	34	9.16
6 -	51	86	42	9.66
7 -	51	82	36	9.8
8 -	44	75	36	7.0
9 -	61	100	51	10.0
10 -	45	77	37	8.8
11 -	49	83	41	5.75
12 -	58	97	48	9.8
13 -	50	80	38	8.4
14 -	59	98	49	9.5
15 -	55	92	46	9.8
16 -	59	98	49	9.9
17 -	64	104	54	9.5
18 -	59	98	49	7.4
19 -	54	86	41	9.75
20 -	46	75	38	7.66
21 -	68	110	58	10.0
22 -	60	99	50	9.08
23 -	54	90	45	9.8
24 -	49	83	41	9.4
25 -	40	67	29	8.4

Table (7) Continued .

Serial no.	Raw score	IQ'	T. score	Scholastic achievement
26 -	50	80	38	8.8
27 -	61	96	48	9.8
28 -	38	66	30	8.0
29 -	28	52	21	9.46
30 -	41	72	33	9.0
31 -	70	114	60	9.0
32 -	54	90	45	9.9
33 -	69	112	59	9.75
34 -	69	112	59	10.0
35 -	63	103	35	8.75
36 -	58	97	48	7.08
37 -	56	94	47	9.25
38 -	59	98	45	7.4
39 -	52	88	43	6.0
40 -	60	99	50	9.0
41 -	64	104	54	9.23
42 -	56	94	43	9.58
43 -	38	66	30	9.5
44 -	48	81	40	9.8
45 -	50	85	41	9.08
46 -	49	83	41	5.75
47 -	63	98	49	8.75
48 -	50	85	41	9.75
49 -	41	72	33	7.13
50 -	47	80	39	8.33

Table (8) Results of raw score, I.Q, T. score and scholastic achievement of controls

Serial no.	Raw score	IQ'	T. score	scholastic achievement
1 -	70	114	60	10.0
2 -	55	92	46	10.0
3 -	52	88	43	9.66
4 -	53	89	44	9.0
5 -	42	73	34	3.93
6 -	52	88	43	9.9
7 -	49	83	41	8.08
8 -	49	83	41	10.0
9 -	56	94	47	9.25
10 -	59	98	49	9.4
11 -	57	90	48	8.43
12 -	56	94	47	9.8
13 -	50	85	41	8.75
14 -	59	98	49	9.8
15 -	54	90	45	10.0
16 -	59	98	49	9.5
17 -	47	80	39	7.58
18 -	60	99	50	9.8
19 -	51	86	42	8.9
20 -	45	77	37	6.9
21 -	62	102	52	9.8
22 -	60	99	50	9.8
23 -	55	92	46	9.58
24 -	52	88	42	9.4
25 -	39	65	28	5.75

Table (8) Continued .

Serial no.	Raw score	IQ	T.score	scholastic achievement
26 -	49	79	37	9.33
27 -	59	93	46	9.25
28 -	55	92	46	9.08
29 -	58	97	48	7.58
30 -	60	99	50	9.5
31 -	67	109	57	9.33
32 -	55	92	46	6.4
33 -	66	107	56	8.75
34 -	67	109	57	8.23
35 -	64	104	54	9.8
36 -	58	97	48	9.0
37 -	56	94	47	9.56
38 -	61	100	51	9.8
39 -	51	86	42	8.75
40 -	60	99	50	9.8
41 -	64	104	54	8.75
42 -	56	94	47	9.16
43 -	36	63	18	8.33
44 -	50	85	41	9.5
45 -	50	85	41	9.08
46 -	50	85	41	9.46
47 -	59	98	49	9.4
48 -	63	103	53	10.0
49 -	61	100	51	9.8
50	64	104	50	8.16

Table (9) : I.Q T.score and scholastic achievement for obese & control children .

	Obese N = 50		Controls N = 50		
	Mean	S.D.	Mean	S.D.	P.
1 - I.Q	89.10	± 13.59	92.46	± 10.52	.0851
2 - T : Score	43.96	± 8.48	45.86	± 7.30	.1166
3 - Scholastic achievement	8.91	± 1.14	8.97	± 1.18	.3890

P. insignificant .

Table 10 : Mean I.Q, T.score and scholastic achievement for obese females and males .

	Obese females N = 30 Mean $\pm$ S.D.	Obese males N = 20 Mean $\pm$ S.D.	P.
1 - I.Q.	86.66 $\pm$ 13.62	92.75 $\pm$ 13.04	.0612
2 - T.score	42.60 $\pm$ 8.25	46.0 $\pm$ 8.21	.0838
3-Scholastic achievement	9.08 $\pm$ 1.02	8.65 $\pm$ 1.29	.0980

P. insignificant .

Table 11 : I.Q, T.Score and scholastic achievement among obese children accorcling to school type .

	Obese children of Private schools (N = 28) Mean $\pm$ S.D.	Obese children of Governmental schools (N = 22) Mean $\pm$ S.D.	P.
1 - I.Q.	92.64 $\pm$ 14.05	84.81 $\pm$ 11.96	.0236 *
2 - T.score	45.96 $\pm$ 8.85	41.40 $\pm$ 7.42	.0294 *
3- Scholastic a chievement	9.09 $\pm$ 1.02	8.68 $\pm$ 1.27	.0971

* = Siginficant .

Table 12 : Comparison between I.Q. - T.score - scholastic achievement according to degree of obesity .

	Super obese (N = 28) Mean $\pm$ S.D.	Obese (N = 22) Mean $\pm$ S.D.	P.
1 - I. Q	87.92 $\pm$ 13.29	90.59 $\pm$ 14.14	.2488
2 - T-score	43.39 $\pm$ 8.26	44.68 $\pm$ 8.90	.2996
3 -Scholastic achievement	8.83 $\pm$ 1.18	9.01 $\pm$ 1.11	.2946

P. insignificant .