Chapter four

Results

3.Results

Ninety randomly samples were collected from non diabetics no hypertension person classify as 30.0 obese 30.0 overweight and 30 as control (37.7%) was male and (62.2%) was a female with ratio Of 1.00:2.00 and participants average age is (28.0±5.00) years to evaluate C-reactive protein ,lipid profile and serum magnesium among study groups

Figure.4.1 Shows frequencies of gender among study groups

Table.4.1a show the comparsion between general characteristics of obese and overweight versus control groups that stating the mean ±SD of BMI (38.2±5.20) , (27.0±1.50) versus (22.9±2.30) with p-value= 0.000,systolic blood pressure(110±8.70), (110±7.50) versus (109±6.10) with p-value =0.52and , ,diastolic blood pressure(72.5±5.10), (70.5±5.10) versus (70.3±5.50)with p-value =0.91, waist circumference (106±11.0), (87.0±5.10) versus (79.2 ±4.30) with p-value =0.000 WHR (0.91±0.03), (0.83±0.03) versus(0.77±0.02) with p-value =0.000, hips(117±9.70), (105±5.10) versus (101±6.20) with p-value =0.000

Table 4.2a comparsion between mean concentration of BMI.,WHR ,systolic and diastolic blood pressure among non hypertensive non diabetic overweight study groups according to gender variation (Male and female) with p value 0.89 for BMI, 0.74 for systolic blood pressure 0.62 for diastolic 0.46 for waist circumference 0.37 for WHR and 0.07 for hips stating that the differences are statistically in significant.

Table 4.2b comparsion between mean concentration of BMI.,WHR ,systolic and diastolic blood pressure among non hypertensive non diabetic obese study groups according to gender variation (Male and female) with p value 0.02for BMI, 0.72 for systolic blood pressure 0.50 for diastolic 0.35for waist circumference ,0.125for WHR and 0.002 for hips stating that the differences are statistically significant in hips and BMI only .

Table 4.3a comparison between means concentration of , lipid profile , crp and magnesium among obese and overweight versus control that Stating the mean ± SD values of CRP (mg/l)to be (68.0± 50.0),(14.4±12.0) versus(4.40±3.00) with p value =0.000 serum total Cholesterol (mg/dl) to (207±49.0), (163 ±16.0) versus (144 ±13.0) with p value =0.000,

serum triglyceride (mg/dl) to be(122 ± 35.0), (97.0 ±23.0) versus (74.0 ±19.0) with p value =0.000, serum HDL (mg/dl) are(39±3.10), (44.0± 5.00) and (51.0± 10.0) with p value =0.000, serum LDL (mg/dl) to (104± 37.2), (75.9 ± 24.0) versus (61.0 ± 16.4) with p value =0.000, serum magnesium (mg/dl) (1.40±0.14), (1.60±0.20) versus (1.90±0.21) with p value =0.000 stating that the differences are statistically significant.

Table.4.4a comparison between mean concentration of total cholesterol , HDL cholesterol ,Triglyceride ,LDL cholesterol ,CRP ,Magnesium among non hypertensive non diabetic overweight study groups according to gender variation(male and female)   p value 0.500 for TC , 0.500 for HDLC 0.800 for LDL C ,0.200 for TG ,0.400 for HSCRP and 0.200 for mg stating that the differences are statistically not significant.

Table.4.4b comparison between mean concentration of total cholesterol , HDL cholesterol ,Triglyceride ,LDL cholesterol ,CRP ,Magnesium among non hypertensive non diabetic overweight study groups according to gender variation(male and female)   p value 0.700 for TC , 0.010 for HDLC 0.900 for LDL C ,0.400 for TG ,0.190 for HSCRP and 0.700 for mg stating that the differences are statistically significant in HDLC only .

figure 4.2a, 4.2c, 4.2e, 4.2g Personal correlation between BMI ,Total cholesterol, HDL cholesterol, LDL cholesterol ,Triglyceride in overweight group ,with r-value(0.130)p-value =0.470,(r=0.190)p-value=0.300, (r=0.320) p-value=0.080 and (r=20.00) p-value =0.160 respectively all result Shows no correlation .

figure 4.2b, 4.2d, 4.2f, 4.2h Personal correlation between BMI ,Total cholesterol, HDL cholesterol, LDL cholesterol ,Triglyceride in obese group ,with r-value(0.520)p-value =0.002,(r=0.450)p-value=0.010, (r=0.350) p-value=0.050 and (r=43.00) p-value =0.010, result Shows positive correlation except in HDL cholesterol correlation is negative

Figure 4.3a,4.3b Personal correlation between BMI and ,C-reactive protein in overweight and obese with r-value 0.290 and p-value 0.120 , r-value 0.380 and p-value 0.030 respectively result Shows no correlation in over weight and positive correlation in obese.

Figure 4.4a,4.4b Personal correlation between BMI and serum magnesium in overweight and obese with r-value 0.370 and p-value 0.030 , r-value 0.520 and p-value 0.003 respectively result Shows negative correlation in over weight and obese.

Figure 4.5a, 4.5c, 4.5e, 4.5g Personal correlation between CRP and Total cholesterol, Triglyceride , HDL cholesterol, LDL cholesterol , in overweight and obese with r-value(0.240)p-value =0.190,(r=0.100)p-value=0.570, (r=-0.280) p-value=0.120 and (r=0.300) p-value=0.100 Shows no correlation in all.

Figure 4.5b, 4.5d, 4.5f, 4.5h Personal correlation between CRP and Total cholesterol, Triglyceride , HDL cholesterol, LDL cholesterol , in overweight and obese with r-value(0.330)p-value =0.070,(r=0.460)p-value=0.010, (r=-0.580) p-value=0.001 and (r=0.410) p-value=0.020 Shows positive correlation in all except total cholesterol no correlation .

Figure 4.6a,4.6b Personal correlation between CRP and serum magnesium in overweight and obese with r-value 0.260 and p-value 0.160 , r-value 0.270 and p-value 0.140 respectively result Shows no correlation in over weight and obese.

Figure 4.6 Personal correlation between CRP and waist hip ratio with r-value 0.640 and p-value 0.000 ,Shows strong positive correlation

Figure 4.7 Personal correlation between CRP and serum mg with r-value -0.410 and p-value 0.000,Shows strong negative correlation.

Figure 4.8a, 4.8b, 4.8c, 4.8d Personal correlation between waist to hips ratio and Total cholesterol, HDL cholesterol, LDL cholesterol ,Triglyceride ,with r-value(0.630)p-value =0.000,(r=0.520)p-value=0.000, (r=0.620) p-value=0.000 and (r=44.00) p-value =0.000 ,Shows positive correlation
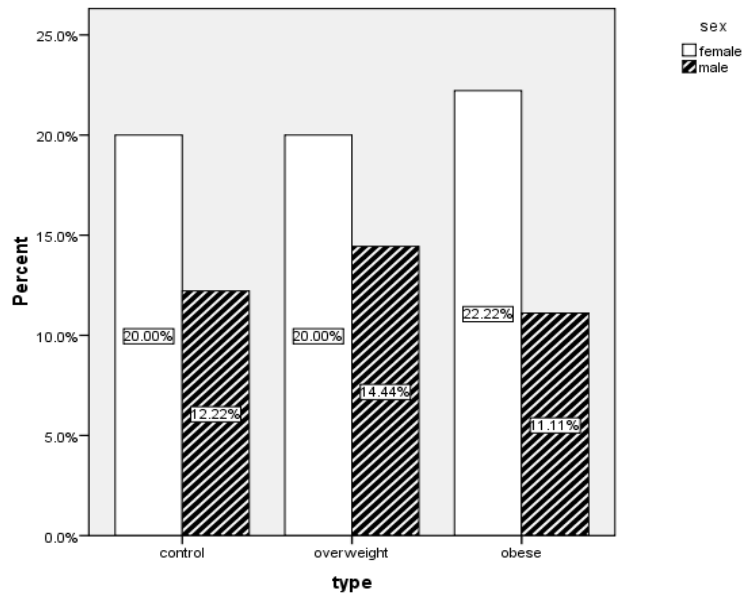
Figure (4.1) Shows percent of gender among study groups

Table (4. 1a) comparison between means of BMI, SBP ,DBP ,WC ,hips circumference and WHR among obese and overweight versus control group

General Characteristics		mean±SD	P value
Body mass index(BMI)	Obese	38.2±5.0	
	Overweight	27.0± 1.50	0.000**
	Control	22.6±1.30	
Systolic blood pressure(SBP)	Obese	110±8.70	
	Overweight	110±7.00	0.670
	Control	109±7.00	
Diastolic blood pressure (DBP)	Obese	72.5±5.00	
	Overweight	70.3 ±5.00	0.157
	Control	70.5±5.00	
Waist circumference(WC)	Obese	106±11.0	
	Overweight	87.0±5.00	0.000**
	Control	79.0±4.60	
Hips circumference(HC)	Obese	117±9.70	
	Overweight	105±5.00	0.000**
	Control	101±6.00	
Waist to hips ratio(WHR)	Obese	0.91±0.03	
	Overweight	0.84±0.03	0.000**
	Control	0.77±0.02	

Result given in mean ± SD. P-value ≤ 0.05 Considers significant

.One way An ova test was used for comparison

Table (4.2a) comparison between means of BMI, SBP, DBP, WC. HC, and WHR among non diabetic non hypertensive overweight subject according to gender

General characteristics		mean± SD	P value
Body mass index	Male	26.0±1.00	0.890
	Female	27.0±1.00	
Systolic blood pressure	Male	110±7.00	0.740
	female	110±7.00	
Diastolic blood pressure	Male	70.0±5.00	0.620
	female	70.0±4.00	
Waist circumference (cm)	Male	88.0±5.00	0.460
	female	87.0±3.00	
Hips circumference (cm)	Male	103±2.00	0.070
	female	106±6.00	
Waist hips ratio	Male	0.85±0.03	0.370
	female	0.84±0.02	

Independent sample T test was used to compare between the two mean Significance difference consider as P-value ≤ 0.05

Table (4.2b) comparison between means of BMI, SBP ,DBP ,WC ,HC and WHR among non diabetic non hypertensive obese subject according to gender

General characteristics		mean± SD	P value
Body mass index (BMI)	Male	35.0±4.00	0.020*
	Female	39.0±4.00	
Systolic blood pressure(SBP)	Male	110±7.00	0.720
	Female	111±9.00	
Diastolic blood pressure (DBP)	Male	71.0±4.00	0.500
	Female	73.0±6.00	
Waist circumference (WC)	Male	100±8.00	0.350
	Female	109±11.0	
Hips circumference (HC)	Male	110±6.00	0.002**
	Female	121±9.00	
Waist hips ratio (WHR)	Male	0.92±0.02	0.125
	Female	0.90±0.02	

Independent sample T test was used to compare between the two means significance difference consider as P-value ≤ 0.05

**Table(4.3a)** comparison between means concentration of CRP, Total cholesterol, triglyceride ,HDL-C,LDLC and magnesium among obese and overweight versus control subjects.

General Characteristics		mean±SD	P value
C-reactive protein(mg/L)	Obese	68.0±50.0	0.000**
	Overweight	14.4±12.0	
	Control	4.40±3.00	
Total cholesterol(mg/dL)	Obese	207±49.0	0.000**
	overweight	163±16.0	
	control	44.0±13.0	
Triglyceride (mg/dL)	obese	121±34.0	0.000**
	overweight	97.0±23.0	
	Control	74.0±19.0	
HDL Cholesterol (mg/dL)	Obese	39.0±2.00	0.000**
	overweight	44.1±5.00	
	Control	51.0±10.0	
LDL Cholesterol (mg/dL)	Obese	104±37.0	0.000**
	overweight	75.9±37.0	
	control	60.0±14.0	
Serum magnesium (mg/dL)	Obese	1.50±0.10	0.000**
	overweight	1.60±0.10	
	Control	1.90±0.2**0**	

Result given in mean ± SD. P-value ≤ 0.05 Consider significant.

One way An ova test was used for comparison

Table (4.4a) comparison between means concentration of HS CRP, total cholesterol , HDL-C ,Triglyceride ,LDL-C, Magnesium   among non diabetic non hypertensive overweight subject according to gender .

Biochemical variables		**mean ± SD**	**P value**
C-reactive protein (mg/dL)	Male	57.0±52.0	0.400
	female	74.0±47.0	
Total cholesterol (mg/dL)	Male	200±45.0	0.500
	female	211±52.0	
Triglyceride (mg/dL)	Male	111±22.0	0.200
	female	127±38.0	
HDLC (mg/dL)	Male	40.0±1.00	0.500
	female	39.0±2.00	
LDLC (mg/dL)	Male	102±33.0	0.800
	female	104±40.0	
Serum magnesium (mg/dL)	Male	1.50±0.20	0.200
	female	1.40±0.06	

Independent   sample T test was used to compare between the two means significance difference consider as P-value ≤ 0.05

Table (4.4b) comparison between means concentration of CRP total cholesterol , HDL-C ,Triglyceride ,LDL-C ,Magnesium among non diabetic non hypertensive obese subject according to gender /

Biochemical variables		mean ± SD	P value
C-reactive protein(mg/dL)	Male	10.0±4.00	0.190
	female	16.0±15.0	
Total cholesterol (mg/dL)	Male	164±12.0	0.700
	female	162±18.0	
Triglyceride(mg/dL)	Male	94.0±22.0	0.400
	female	100±23.0	
HDLC (mg/dL)	Male	47.0±6.00	0.010*
	female	42.0±3.00	
LDLC (mg/dL	Male	75.0±10.0	0.900
	female	76.0±30.0	
Serum magnesium (mg/dL)	Male	1.60±0.20	0.700
	female	1.60±1.10	

Independent sample T test was used to compare between the two means significance difference consider as P-value ≤ 0.05
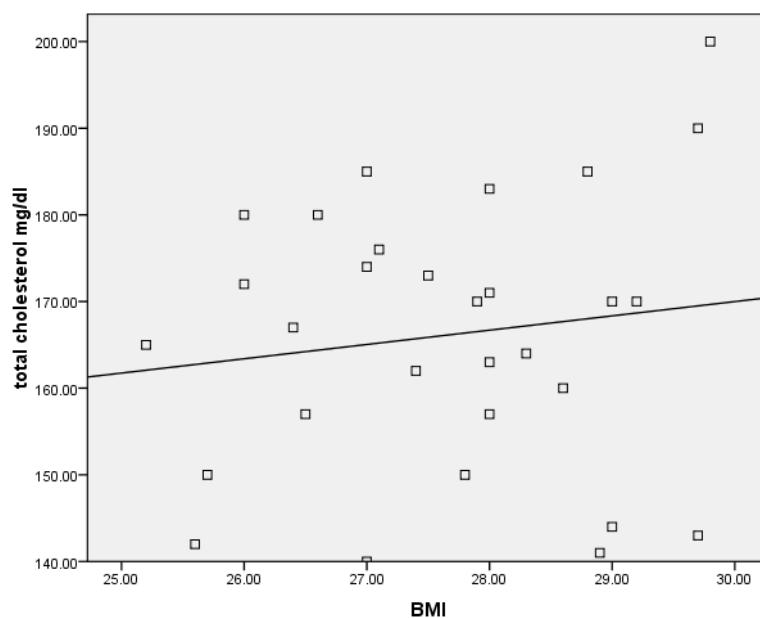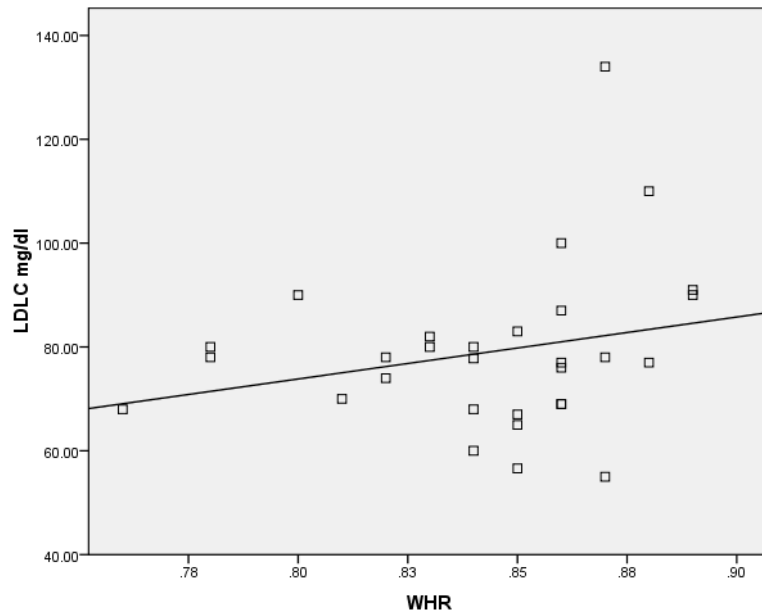

Figure (4.2a) Scatter plot shows correlation between BMI and serum total cholesterol in overweight group, insignificant positive weak correlation (p=0.250,r=0.170)

27
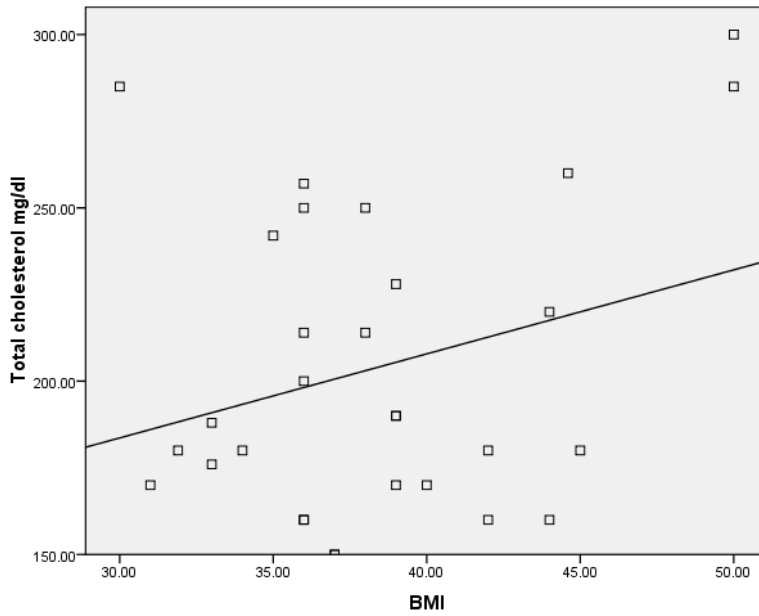
Figure (4.2b) Scatter plot shows correlation between BMI and serum total cholesterol in obese group , insignificant positive weak correlation (p=0.130,r=0.270)
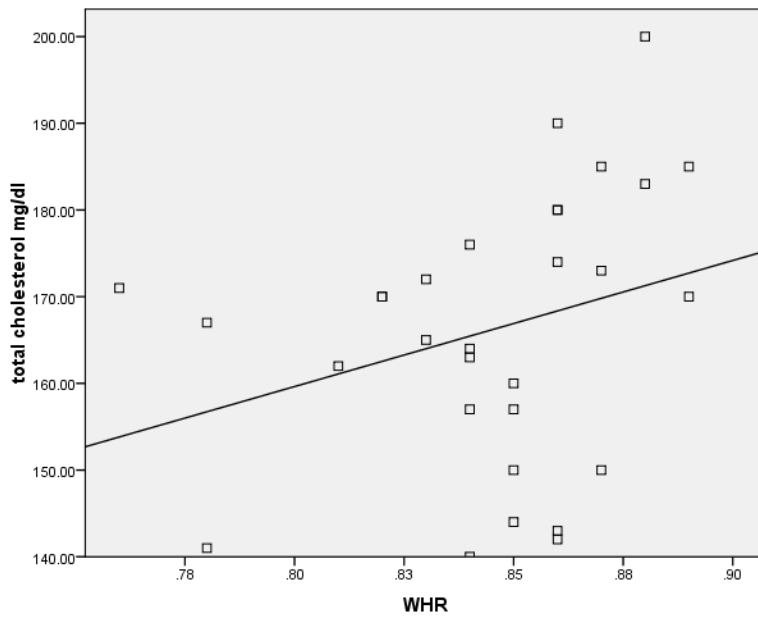
Figure (4.2c) Scatter plot shows correlation between waist hips ratio and serum total cholesterol in overweight group insignificant positive weak correlation (p=0.430.r=0.150)
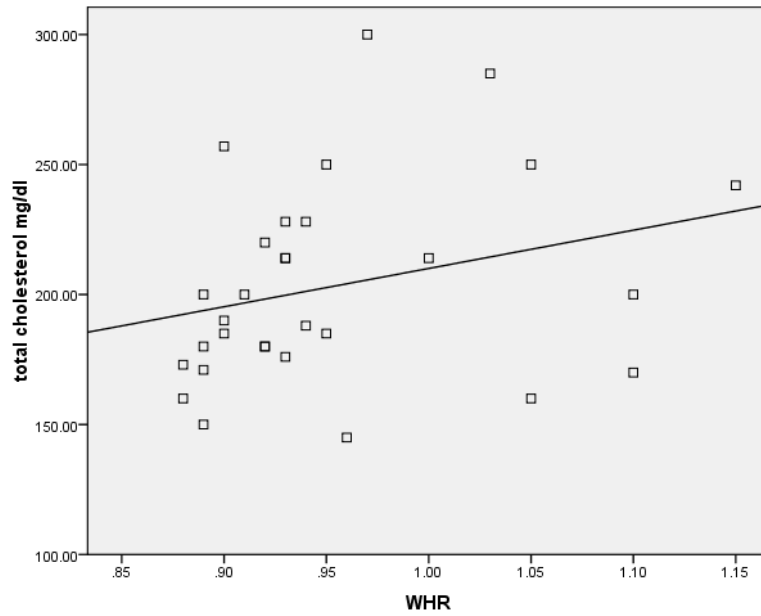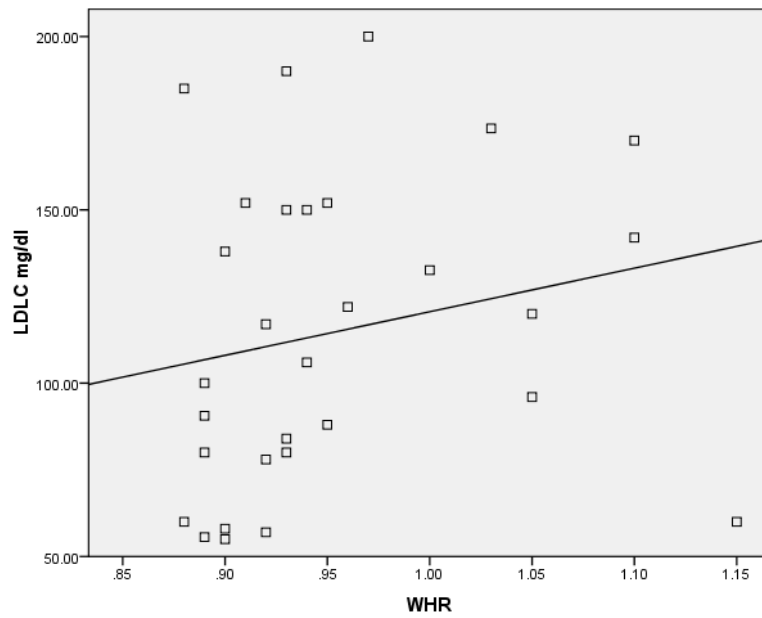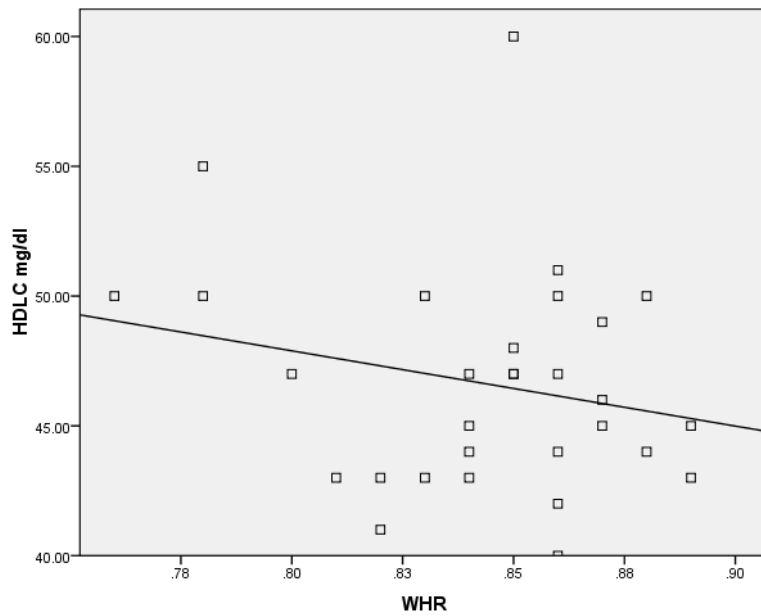
Figure (4.2d) Scatter plot shows correlation between waist hips ratio and serum total cholesterol in Obese group ,significant positive correlation (p=0.010,r=0.450)
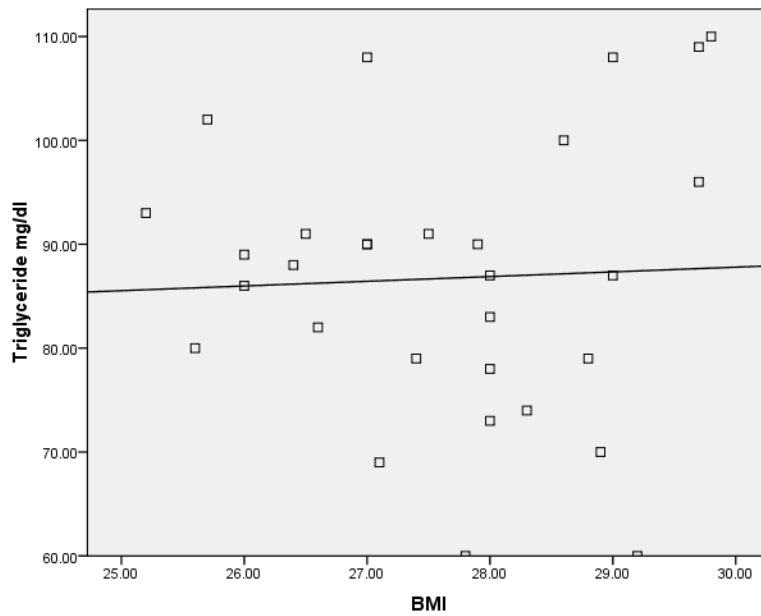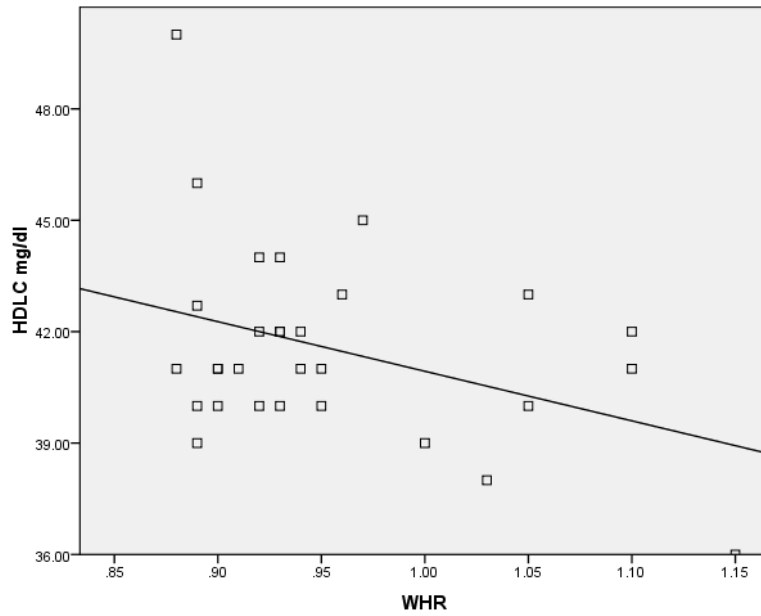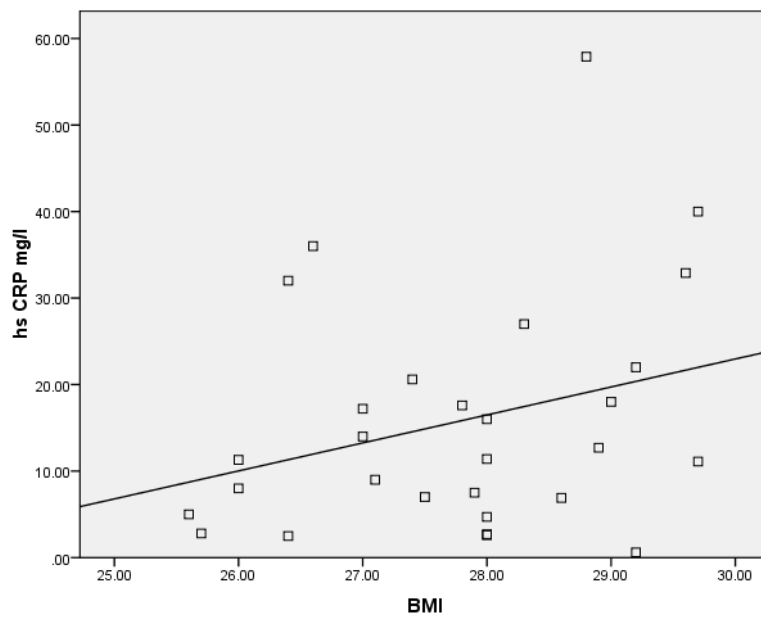

Figure (4.3a) Scatter plot shows correlation between BMI and serum triglyceride in overweight group , insignificant positive weak correlation (p=0.160,r=0.200)
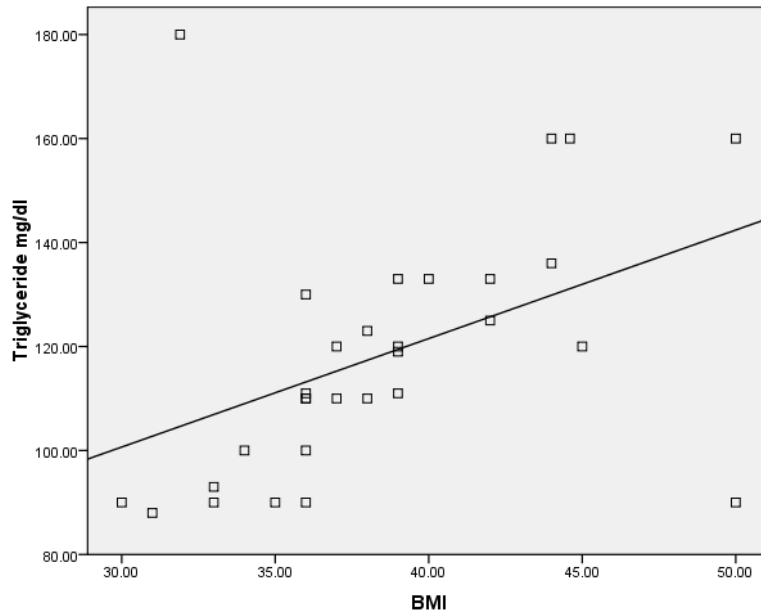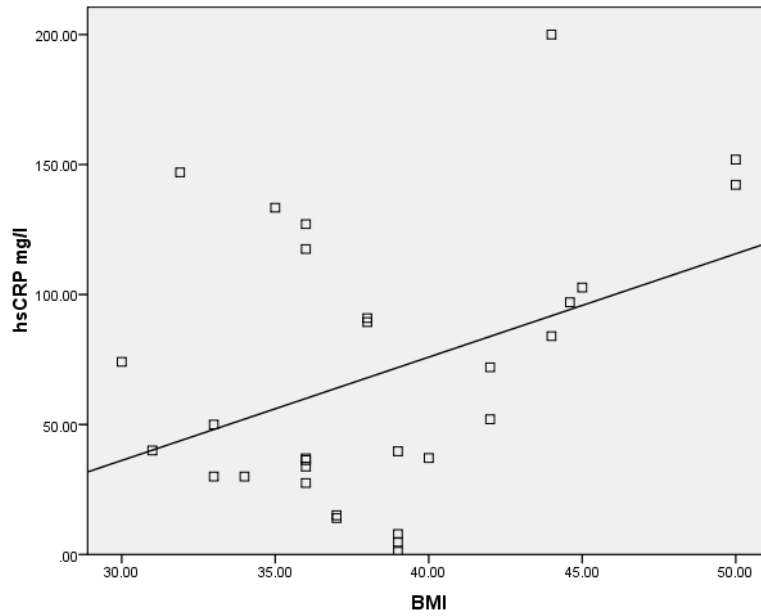
Figure (4.3b) Scatter plot shows correlation between BMI and serum triglyceride in obese group , significant positive correlation (p=0.010,r=0.430)
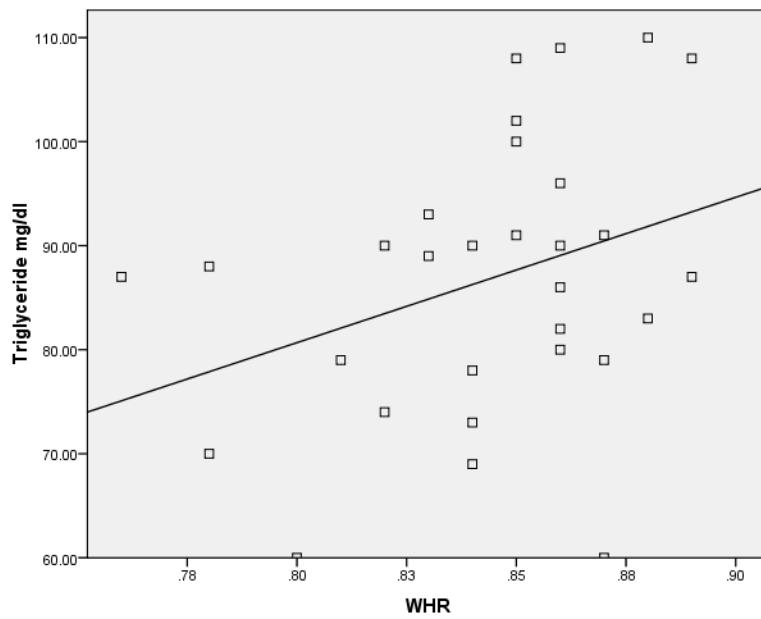
Figure (4.3c) Scatter plot shows correlation between waist hips ratio and triglyceride in overweight group, insignificant positive weak correlation (p=0.130,r=0.270))
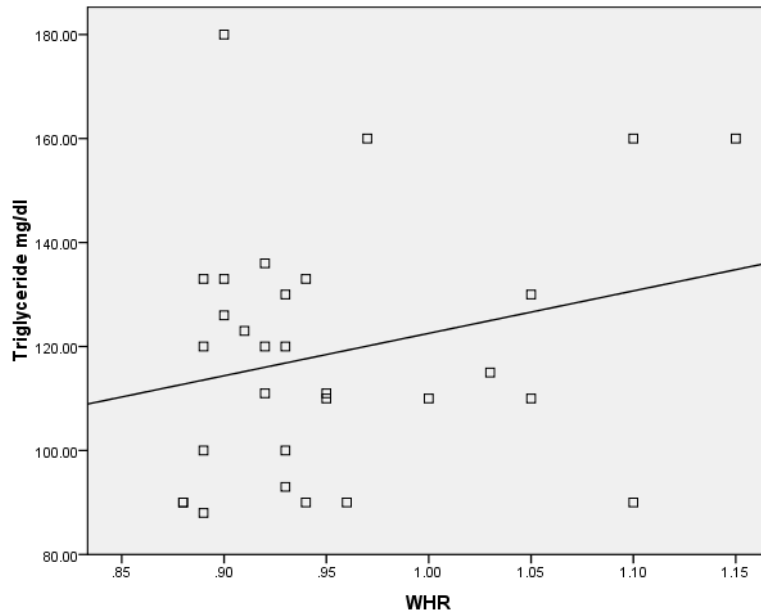
Figure (4.3d) Scatter plot show correlation between waist hips ratio and serum total cholesterol in obese group ,significant positive correlation(p=0.040,r=0.370)
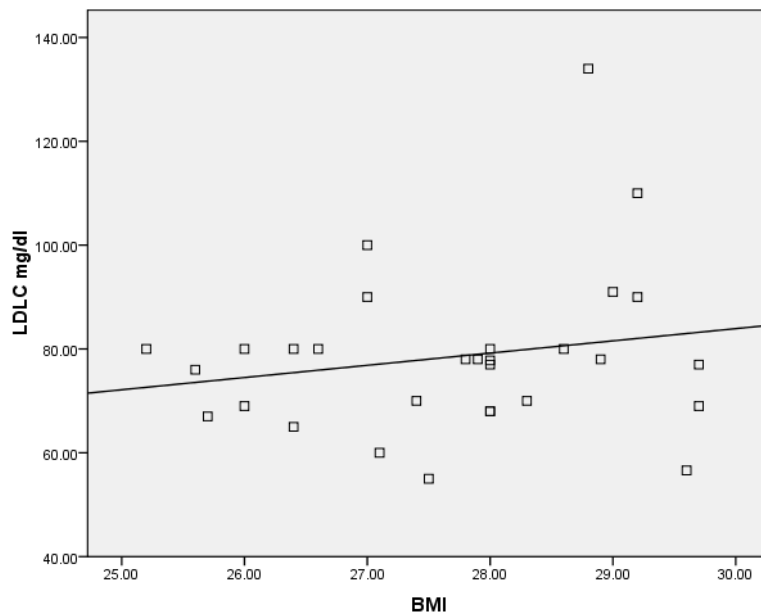
Figure (4.4a) Scatter plot shows correlation between BMI and serum LDL-C in overweight group , insignificant positive weak correlation (p=0.190,r=0.300)
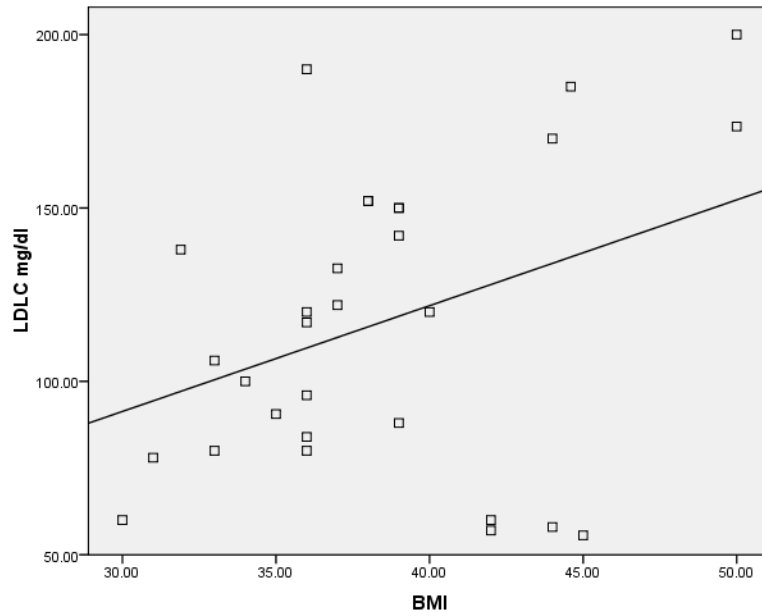
Figure (4.4b) Scatter plot shows correlation between BMI and serum LDL-C in obese group ,significant positive correlation (p=0.020,r=0.410)
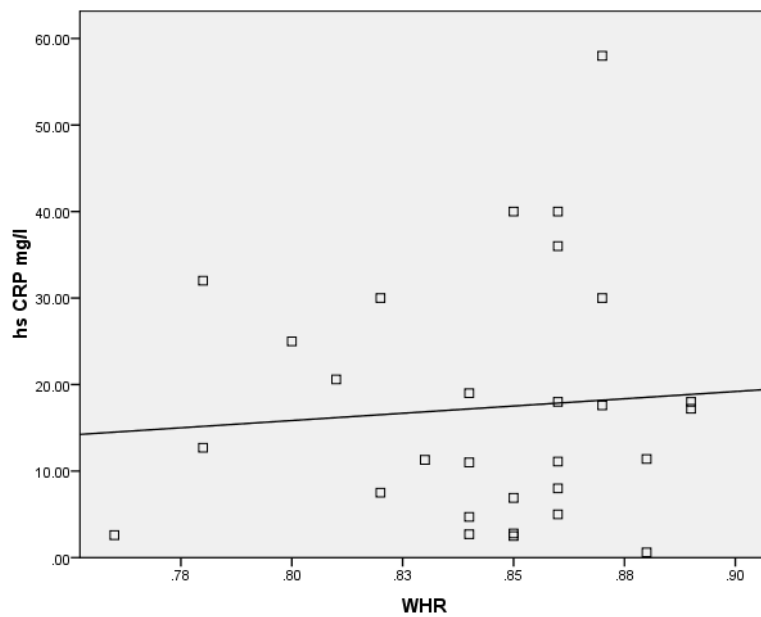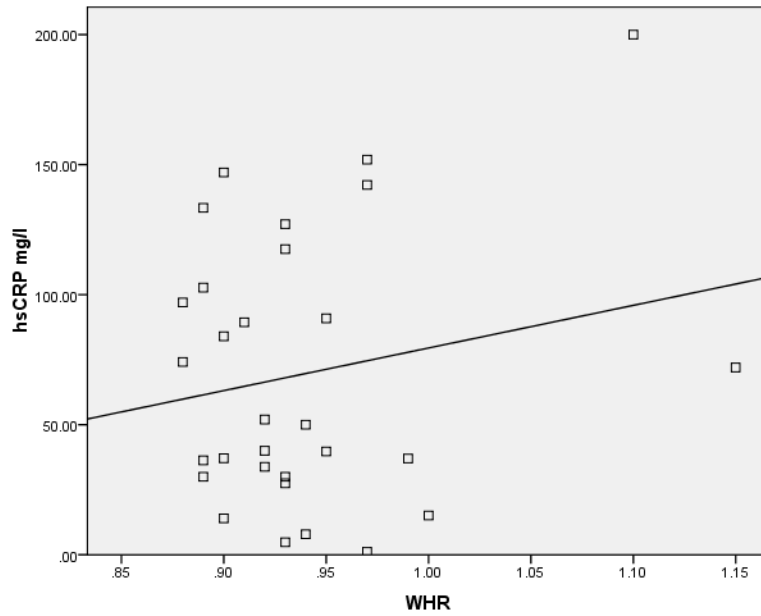

Figure (4.4c) Scatter plot show correlation between waist hips ratio and serum LDL-C in overweight group ,insignificant positive weak correlation (p=0.470,r=0.130)

Figure (4.4d) Scatter plot show correlation between waist hips ratio and serum LDL-C in obese group ,significant positive correlation (p=0.040,r=0.370)
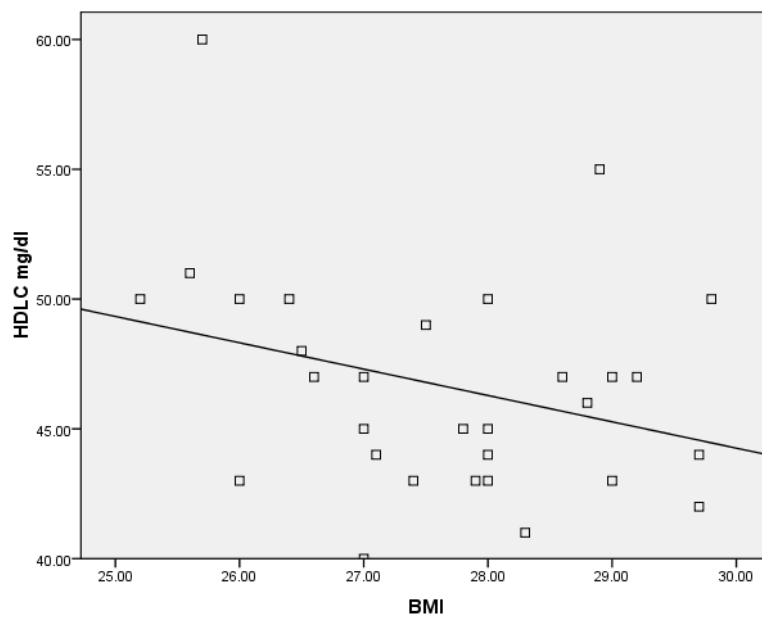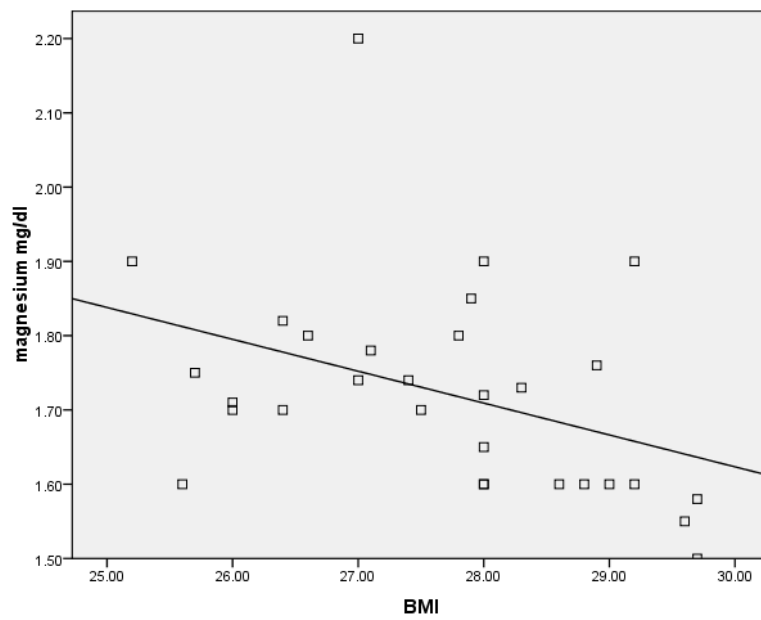

Figure (4.5a) Scatter plot shows correlation between BMI and serum HDL-C in overweight group , significant negative correlation (p=0.020,r=0.410)
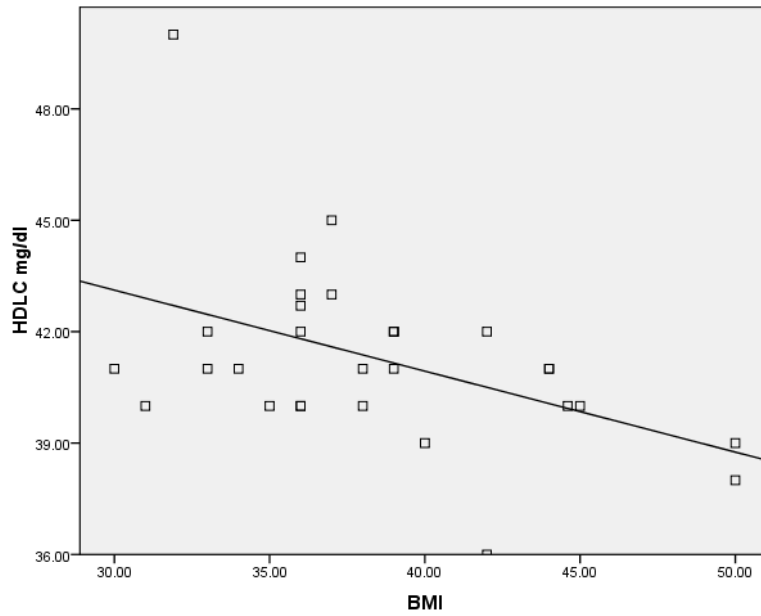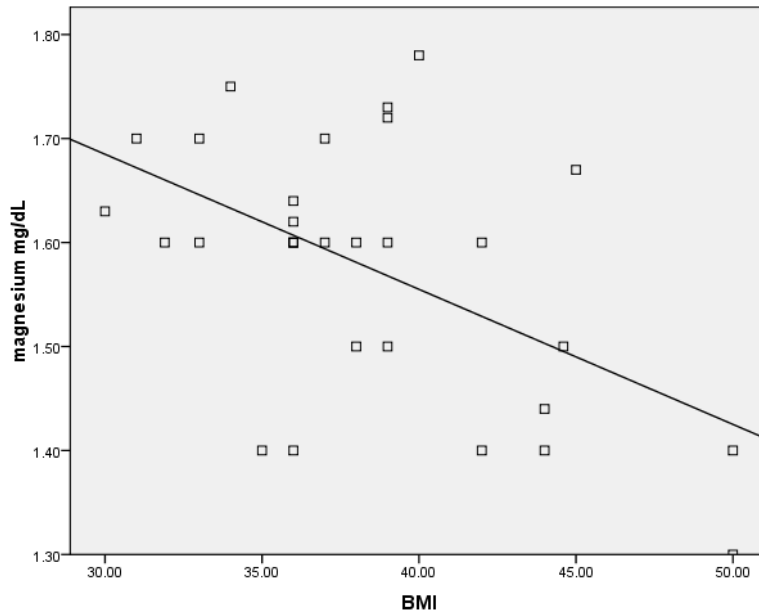
Figure (4.5b) Scatter plot shows correlation between BMI and serum HDL-C in obese group , significant negative correlation (p=0.005,r=0.500)
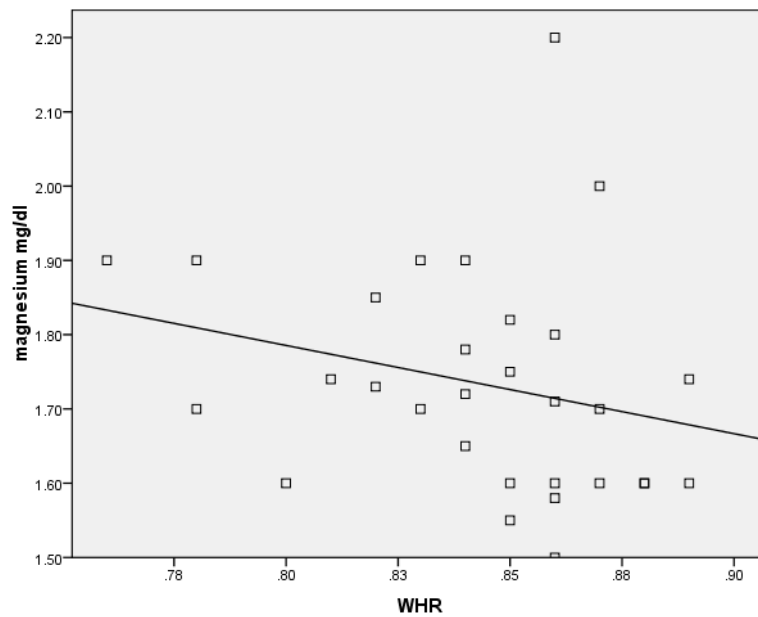

Figure (4.5c) Scatter plot show correlation between waist hips ratio and serum HDL cholesterol in overweight group ,significant negative correlation (p=0.050,r=0.350)
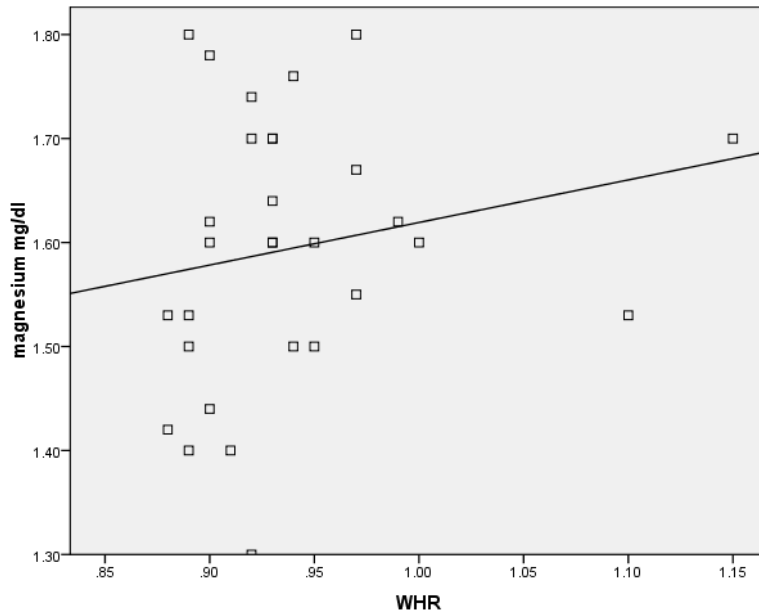
Figure (4.5d) scatter plot show correlation between waist hips ratio and serum HDL-C in obese   group ,significant negative correlation (p=0.001,r=0.510)

Figure (4.6a) Scatter plot shows correlation between BMI and c-reactive protein in overweight group ,insignificant   weak positive correlation (p=0.120,r=0.290).

Figure (4.6b) Scatter plot shows correlation between BMI and C-reactive protein in obese group , significant positive correlation (p=0.010,r=0.440).

Figure (4.6c) Scatter plot shows correlation between CRP and WHR in overweight group insignificant positive weak correlation (p=0.270,r=0.270)

Figure (4.6d) Scatter plot shows correlation between CRP and WHR in obese group , significant positive correlation (p=0.000,r=0.620)

Figure (4.7a) Scatter plot shows correlation between BMI and serum magnesium in overweight group ,significant negative correlation(P=0.030,r=39.00).

Figure (4.7b) Scatter plot shows correlation between BMI and serum magnesium in obese group , significant negative correlation(P=0.004 , r=51.00).
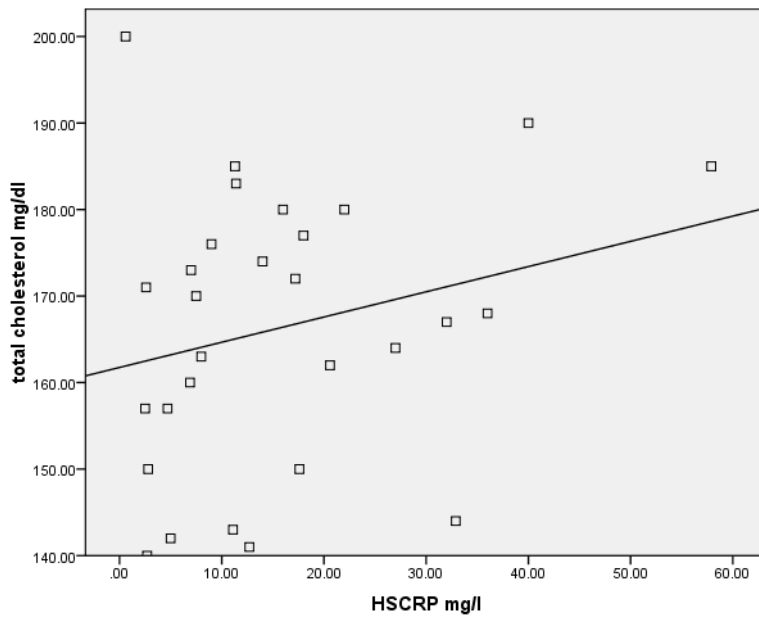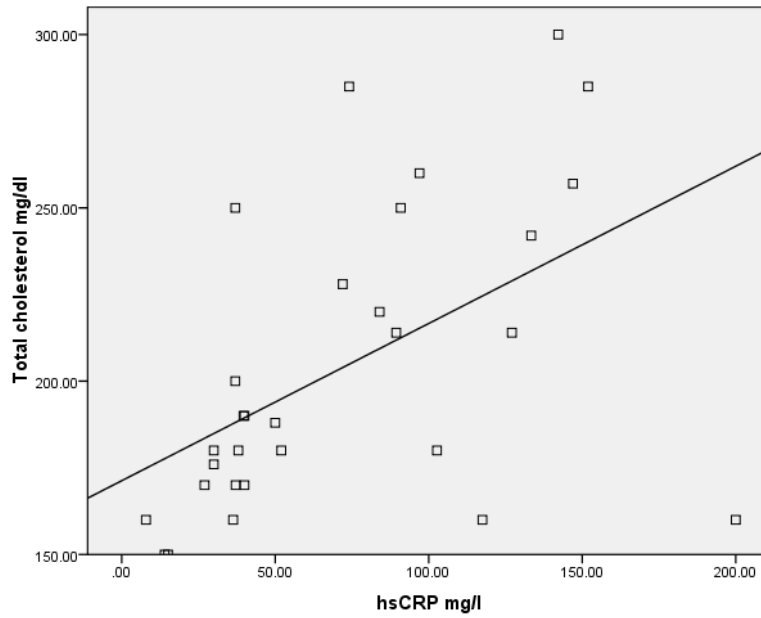

figure (4.7c) Scatter plot shows correlation between waist hip ratio and serum magnesium in overweight group ,significant negative correlation (p=0.050,r=0.350)

Figure (4.7d) Scatter plot shows correlation between waist hip ratio and serum magnesium in obese group ,significant negative correlation (p=0.010,r=0.420) .

Figure (4.8a) Scatter plot shows correlation between CRP and total serum cholesterol in overweight group , insignificant weak positive correlation (p=0.190, r=0.240)
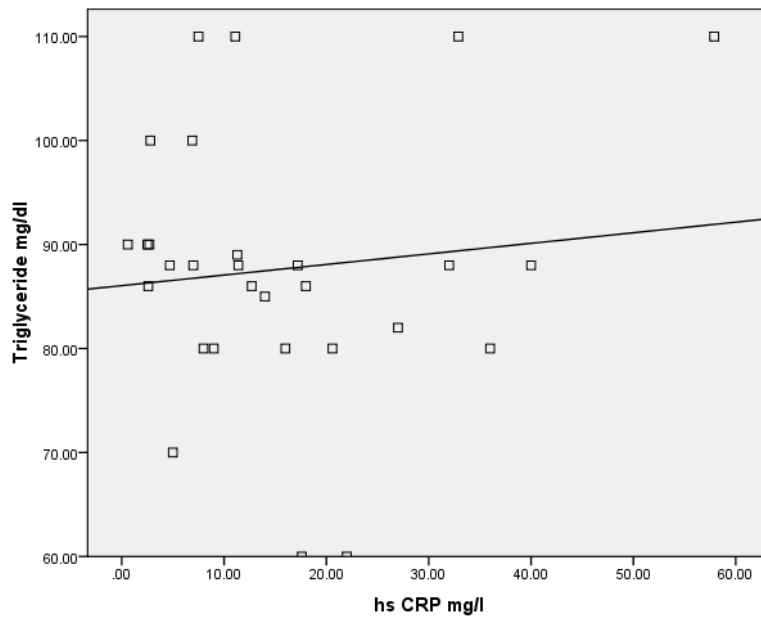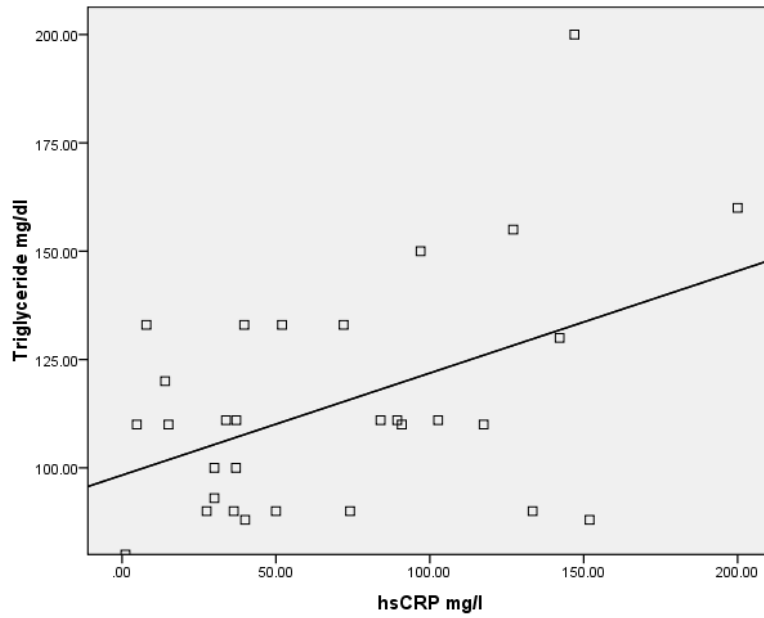
Figure (4.8b) Scatter plot shows correlation between CRP and total serum cholesterol in obese group , significant positive correlation (p=0.510, r=0.004)
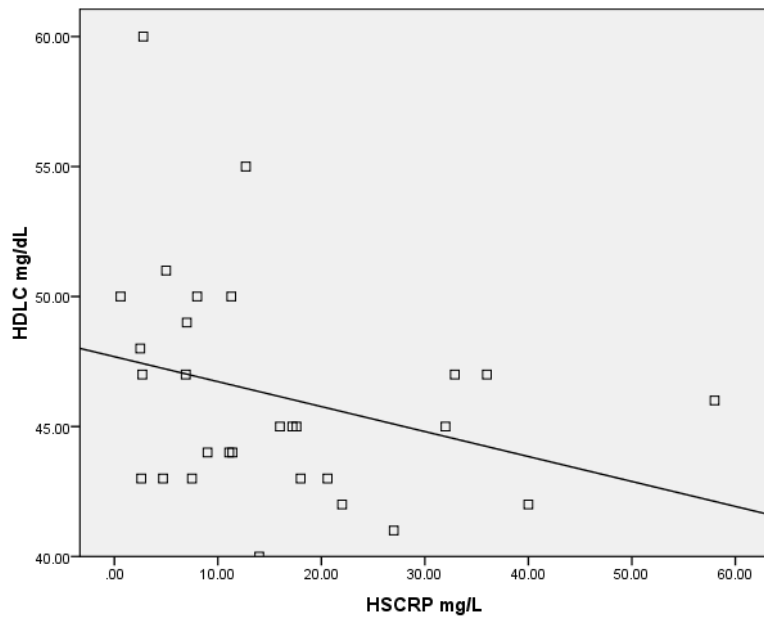

Figure (4.8c) Scatter plot shows correlation between CRP and serum triglyceride in overweight group ,insignificant weak positive correlation (p=0.570,r=0.100)

Figure (4.8d) Scatter plot shows correlation between CRP and serum triglyceride in obese group , significant positive correlation (p=0.030,r=0.390)

Figure (4.8e) Scatter plot shows correlation between CRP and serum HDL-C in overweight group ,insignificant weak negative correlation (p=0.110,r=0.300)
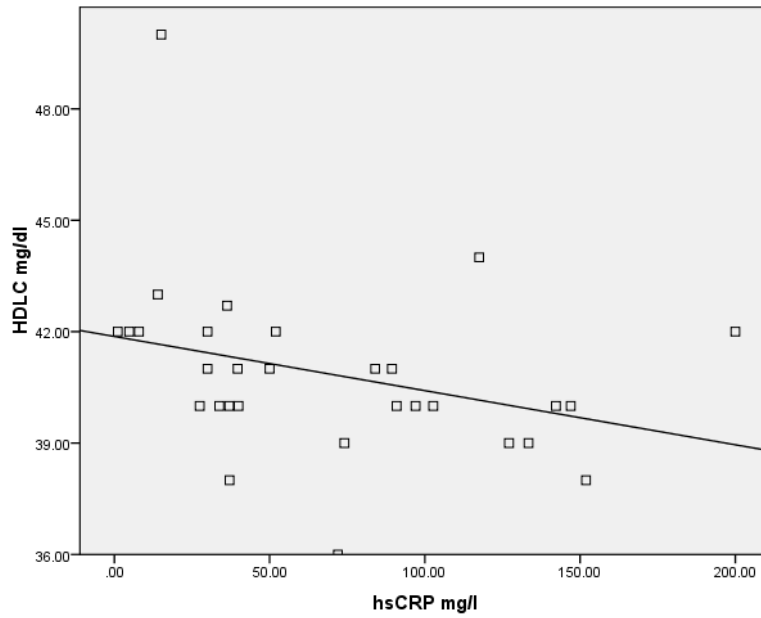
Figure (4.8f)) Scatter plot shows correlation between CRP and serum HDL-C in obese group ,insignificant weak negative correlation (p=0.030,r=0.39.00)
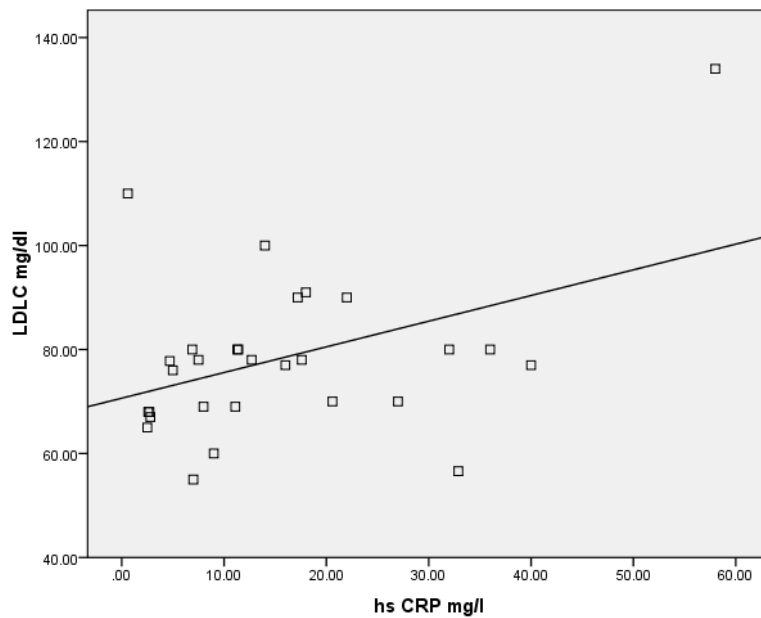

Figure (4.8g) Scatter plot shows correlation between CRP and serum LDL-C in overweight group ,insignificant positive weak correlation (p=0.100,r=0.300).
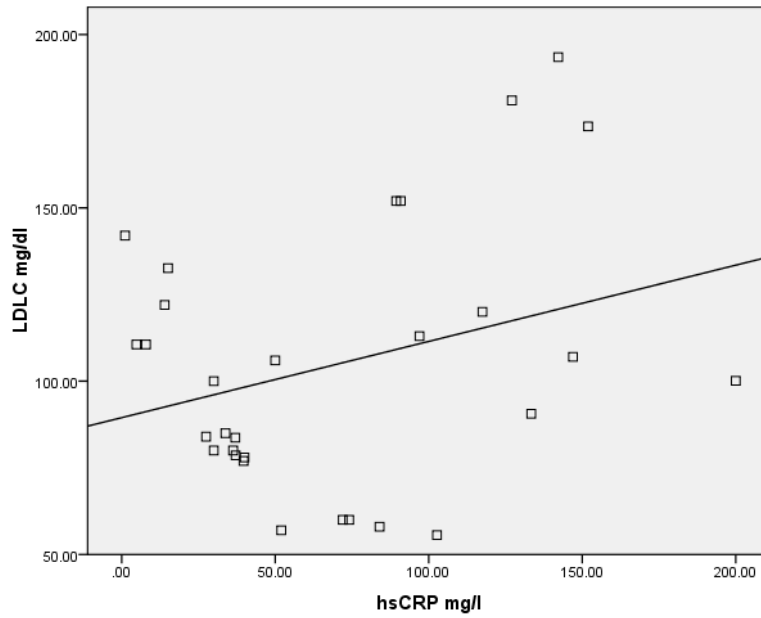
Figure (4.8h) Scatter plot shows correlation between CRP and LDL cholesterol in obese group ,insignificant positive correlation (p=0.004,r=0.510)
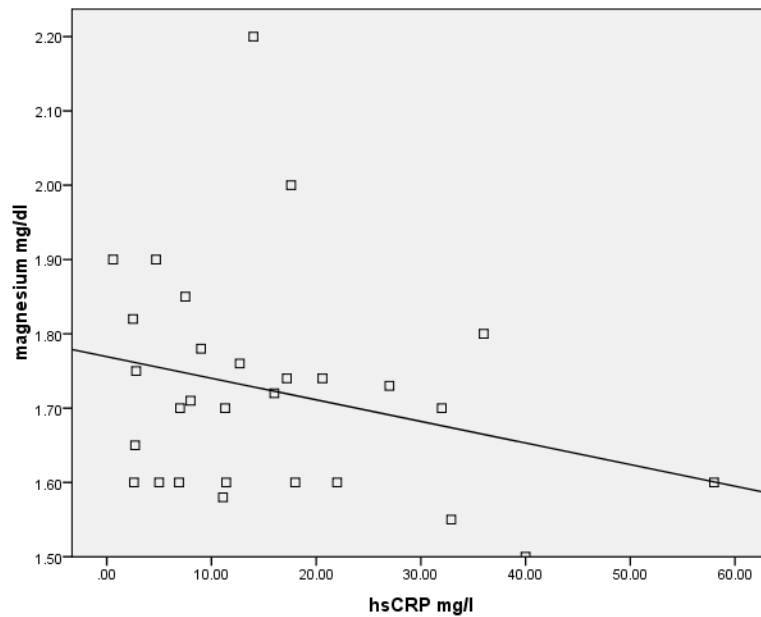

Figure (4.9a) Scatter plot shows correlation between CRP and serum magnesium in overweight group insignificant positive weak correlation (p=0.160,r=0.260)
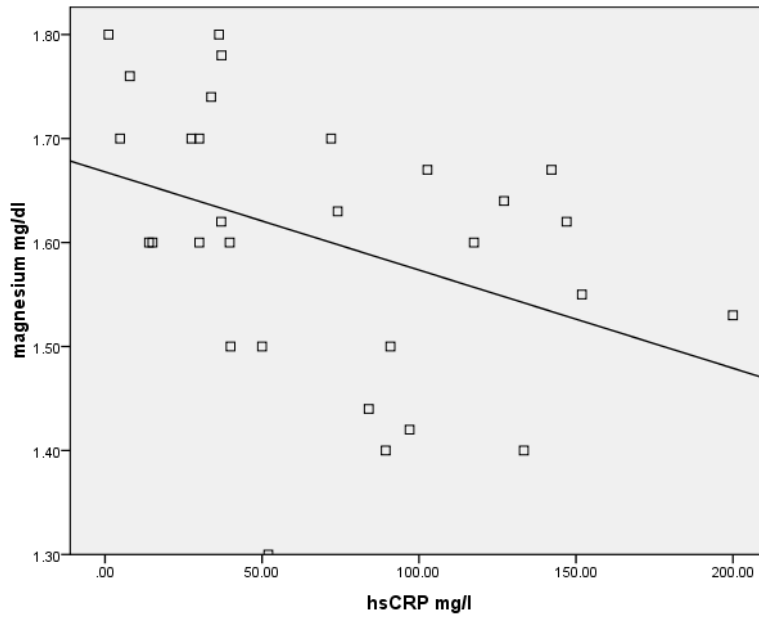
Figure (4.9b) Scatter plot shows correlation between CRP and serum magnesium in obese group significant positive correlation (p=0.003,r=0.510)