Non-compliance on treatment among diabetic students at Sohag University

NCT05286450

14/3/2022

Statistical analysis

Data collected throughout history, basic clinical examination, laboratory investigations and outcome measures were coded, entered and analyzed using SPSS (statistical package for social science) version 25 (Armonk, NY: IBM Corp).

Two types of statistics were done**:**

Descriptive statistics:

-According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean ±SD

Analytic statistics:

- Student t-test: was used for comparison between two groups having quantitative variables with normal distribution (for parametric data)

- Mann-Whitney U Test: is a test of significance used for correlation and comparison between two groups having quantitative variables without normal distribution (for non-parametric data)

- Multi-variate analysis using binary logistic regression was used to predict factors affecting means of scores of different domains of DMSQ and the total

- A P-value of < 0.05 was considered statistically significant & <0.001 for high significant result for two tailed tests.

Data were collected and submitted to statistical analysis. The following statistical tests and parameters were used

Results

This was an observational cross-sectional study. It was done on 153 participants of diabetic Sohag University students aged between 18 and 25, chosen randomly, apparently healthy.

The results of this study will be presented in the following tables groups:

First: Sociodemographic characteristics of participants (table 1) and clinical data (table 2).

Second: participants' responses to each domain and the scores of the domains and the total and correlation between the scores (tables 3-8).

Third: Correlation between means score of DMSQ domains and the total with participants' demographic and clinical data (tables 9-17)

Table (1): Participants demographic data:

Variable	Frequency	Percent
Age (year)		
Min.-Max.	18-24	
Mean ±SD	20.85±1.49	
Gender		
Male	62	40.5
Female	91	59.5
Residence		
Rural	61	39.9
Urban	92	60.1
Faculty		
Scientific	51	33.3
Literary	102	66.7
Grade		
Grade 1	30	19.6
Grade 2	59	38.6
Grade 3	34	22.2
Grade 4	26	17.0
Grade 5	4	2.6
Work beside studying		
Yes	37	24.2
No	116	75.8
If the answer is yes (n=37)		
Daily work	6	3.9
Work in holidays	31	20.3
Are you a smoker?		
Yes	13	8.5
No	140	91.5

The participants' age (year) ranged from 18 to 24 years, and mean ±SD was 20.85±1.49 the third of them were males; 62(40.5%), while the other two thirds were females 91(59.5%). As regards the residence of participants, they were mainly from urban 92(60.1%), and to less extent from rural 61(39.9%), the participants who were studying in a scientific faculty were 51(33.3), and in Literary faculty were 102(66.7%).

The participants were mainly in grades 2 and 3, and less percentages were in grades 1,4, and 5. We found that 37(24.2%) of participants were working beside studying, where 6(3.9%) had daily work, while 31(20.3%) only working in holidays. Our participants were smoking but to a very little extent only 13(8.5%) were smokers.

Table (2): Distribution of participants according to clinical data:

Variable	Frequency	Percent
Duration of diabetes (year)		
Min.-Max.	1-20	
Mean ±SD	11.75±5.16	
Chronic diseases other than diabetes		
Yes	10	6.5
No	143	93.5
If the answer is yes (n=10)		
Anemia	2	1.3
Celiac	2	1.3
Diabetic neuropathy	1	0.7
Hemophilia	1	0.7
Hypertension	1	0.7
Hyperthyroidism	2	1.3
PCO	1	0.7
Do you suffer from any complications of diabetes?		
Yes	33	21.6
No	120	78.4
If the answer is yes (n=10)		
Blood acidosis	2	1.3
Diabetic neuropathy	15	9.8
Diabetic retinopathy	3	2.0
Exhaustion	6	3.9
Gastritis	2	1.3
Headache	2	1.3
Rash	3	2.0

This table shows the distribution of participants according to clinical data, where the duration of diabetes mean ±SD was 11.75±5.16 years, 10(6.5%) participants had chronic diseases other than diabetes; (Anemia, Celiac, Diabetic neuropathy, Hemophilia, Hypertension, Hyperthyroidism, and PCO), 33(21.6%) participants suffered from complications from diabetes mainly diabetic neuropathy.

Table (3): Distribution of participants responses as regards DSMQ Glucose Management domain:

Variable		Does not apply to me	Applies to me to some degree	Applies to me to a consider-able degree	Applies to me very much
I check my blood sugar levels with care and attention.	N	13	56	39	45
	%	8.5	36.6	25.5	29.4
I take my diabetes medication (e. g. insulin, tablets) as prescribed	N	1	12	32	108
	%	0.7	7.8	20.9	70.6
I record my blood sugar levels regularly (or analyse the value chart with my blood glucose meter).	N	20	51	35	47
	%	13.1	33.3	22.9	30.7
I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control.	N	61	37	39	16
	%	39.9	24.2	25.5	10.5
I tend to forget to take or skip my diabetes medication (e. g. insulin, tablets).	N	120	23	7	3
	%	78.4	15	4.6	2

Table 3 shows the distribution of participants responses as regards DSMQ Glucose Management domain.

Table (4): Distribution of participants responses as regards DSMQ Dietary Control domain:

Variable		Does not apply to me	Applies to me to some degree	Applies to me to a consider-able degree	Applies to me very much
The food I choose to eat makes it easy to achieve optimal blood sugar levels.	N	12	71	43	27
	%	7.8	46.4	28.1	17.6
Occasionally I eat lots of sweets or other foods rich in carbohydrates.	N	33	52	50	18
	%	21.6	34	32.7	11.8
I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	N	30	64	33	26
	%	19.6	41.8	21.6	17
Sometimes I have real 'food binges' (not triggered by hypoglycemia).	N	50	43	39	21
	%	32.7	28.1	25.5	13.7

Table 4 shows the distribution of participants responses as regards DSMQ Dietary Control domain.

Table (5): Distribution of participants responses as regards DSMQ Physical Activity domain:

Variable		Does not apply to me	Applies to me to some degree	Applies to me to a consider-able degree	Applies to me very much
I do regular physical activity to achieve optimal blood sugar levels.	N	90	31	18	14
	%	58.8	20.3	11.8	9.2
I avoid physical activity, although it would improve my diabetes.	N	42	45	14	52
	%	27.5	29.4	9.2	34
I tend to skip planned physical activity.	N	37	30	25	61
	%	24.2	19.6	16.3	39.9

Table 5 shows the distribution of participants responses as regards DSMQ Physical Activity domain.

Table (6): Distribution of participants responses as regards DSMQ Health Care use domain:

Variable		Does not apply to me	Applies to me to some degree	Applies to me to a consider-able degree	Applies to me very much
I keep all doctors' appointments recommended for my diabetes treatment.	N	40	60	26	27
	%	26.1	39.2	17	17.6
I tend to avoid diabetes-related doctors' appointments.	N	72	46	23	12
	%	47.1	30.1	15	7.8
Regarding my diabetes care, I should see my medical practitioner(s) more often.	N	34	50	35	34
	%	22.2	32.7	22.9	22.2
My diabetes self-care is poor.	N	46	49	38	20
	%	30.1	32	24.8	13.1

Table 6 shows the distribution of participants responses as regards DSMQ Health Care use domain.

Table (7): Distribution of mean of DSMQ domains and total:

	Median	Mean	±	S. D	Minimum	Maximum
Glucose Management	5.00	4.97	±	1.28	1.00	9.00
Dietary Control	4.00	4.54	±	1.22	2.00	10.00
Physical Activity	3.00	4.33	±	2.18	0.00	8.00
Health Care use	4.00	4.06	±	1.78	0.00	8.00
DSMQ Total	18.00	17.90	±	4.35	6.00	28.00

Glucose Management median was 5.00 and mean± SD was 4.97±1.28 with range 1.00-9.00, Dietary Control median was 4.00 and mean± SD was 4.54±1.22 with range 2.00-10.00, Physical Activity median was 3.00 and mean± SD was 4.33±2.18 with range 0.00-8.00, Health Care use median was 4.00 and mean± SD was 4.06±1.78 with range 0.00-8.00, DSMQ Total median was 18.00 and mean± SD was 17.90±4.35 with range 6.00-28.00.

Table (8): Correlation of DSMQ domains and total:

		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Glucose Management	**r**		0.٣١٦	٠,٢١١	0.088	0.505
	P		<0.001**	0.009*	0.282	<0.001**
Dietary Control	**r**	0.316		0.210	0.242	0.569
	P	<0.001**		0.009*	0.003*	<0.001**
Physical Activity	**r**	0.211	0.210		0.641	0.821
	P	0.009*	0.009*		<0.001**	<0.001**
Health Care use	**r**	0.088	0.242	0.641		0.775
	P	0.282	0.003*	<0.001**		<0.001**

r: correlation coefficient p: p-value *: P-value≤0.05 is significant **: P-value≤0.001 is highly significant

There was significant positive correlation between all domains score and the total but there was no correlation between the scores of glucose management and health care use domains.

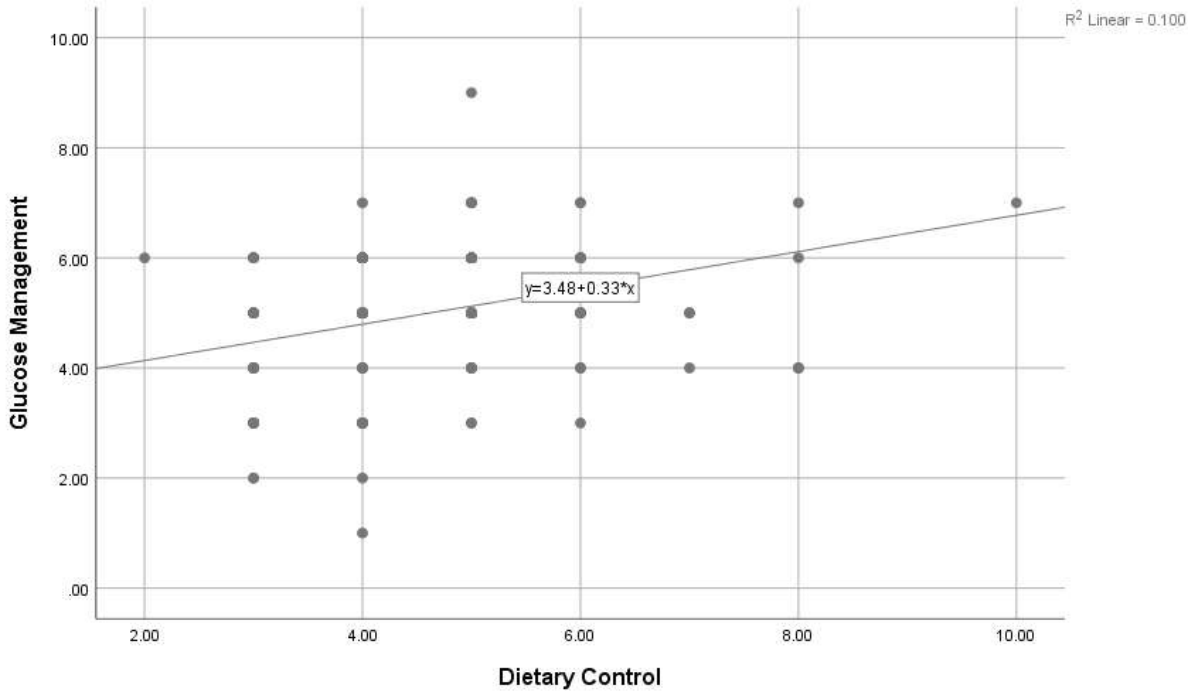

Figure (): Correlation between glucose management and dietary control

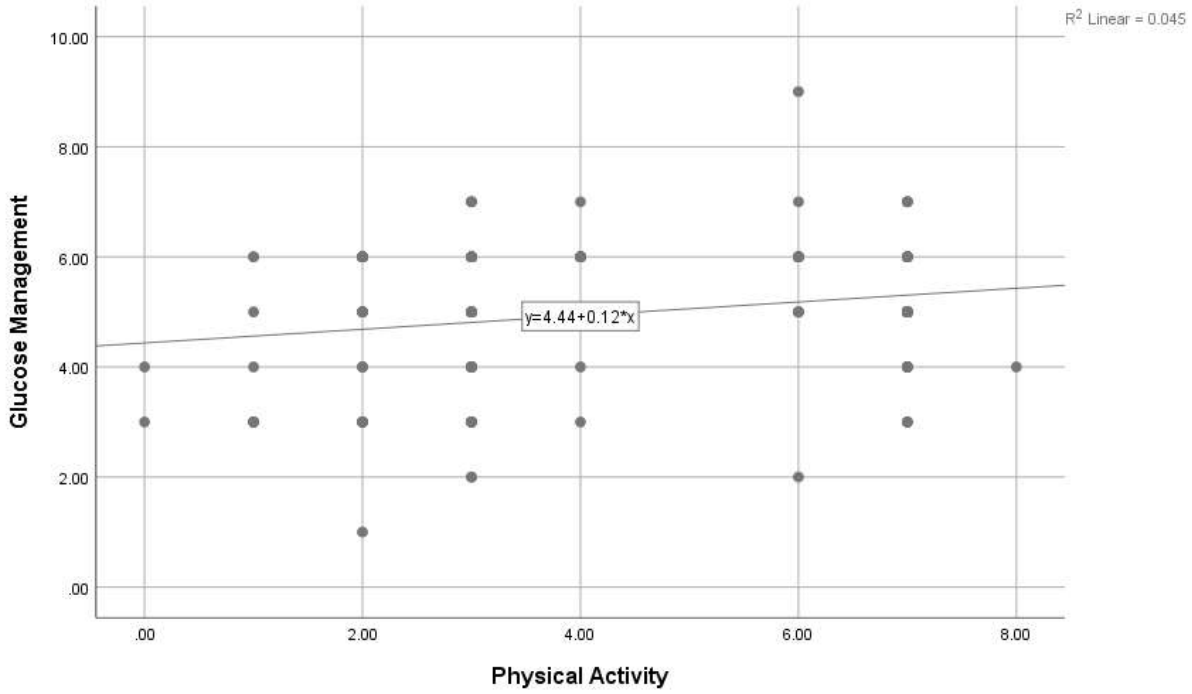

Figure (): Correlation between glucose management and physical activity

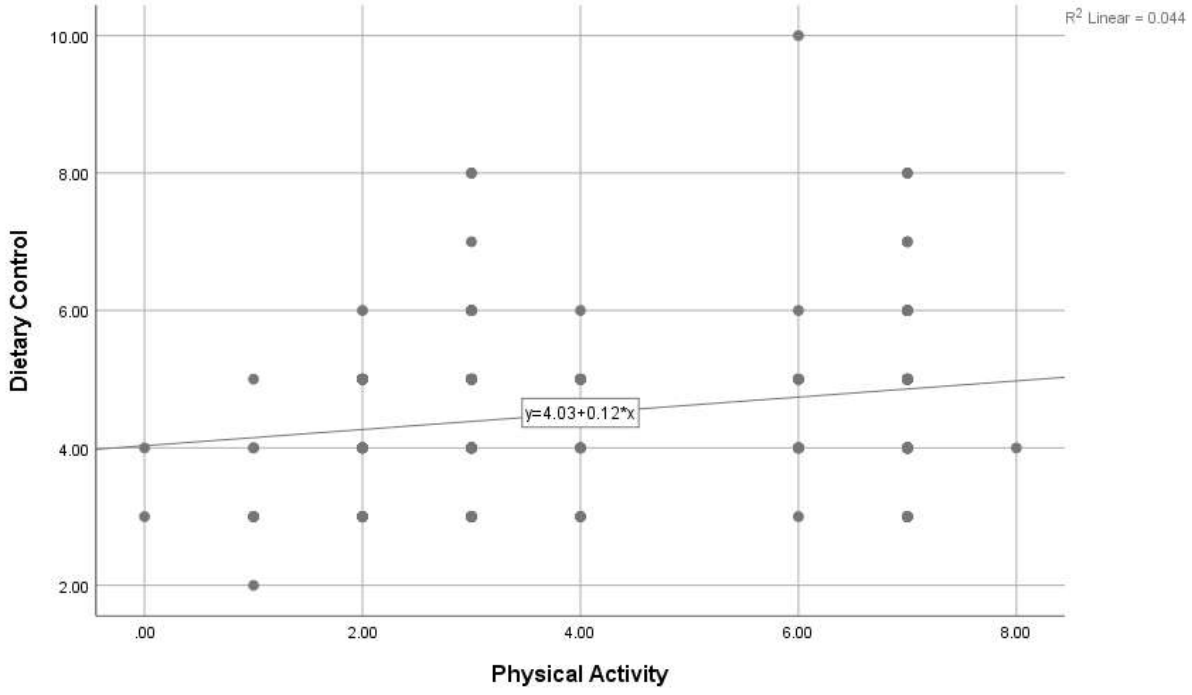

Figure (): Correlation between dietary control and physical activiy

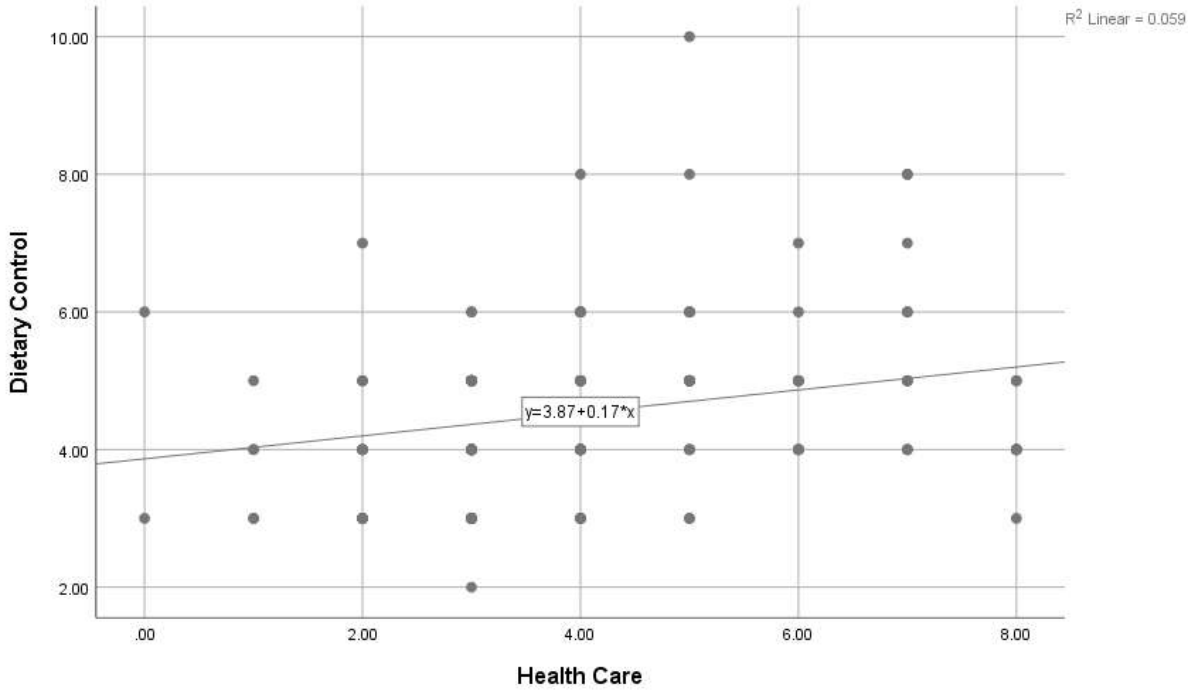

Figure (): Correlation between dietary control and health care

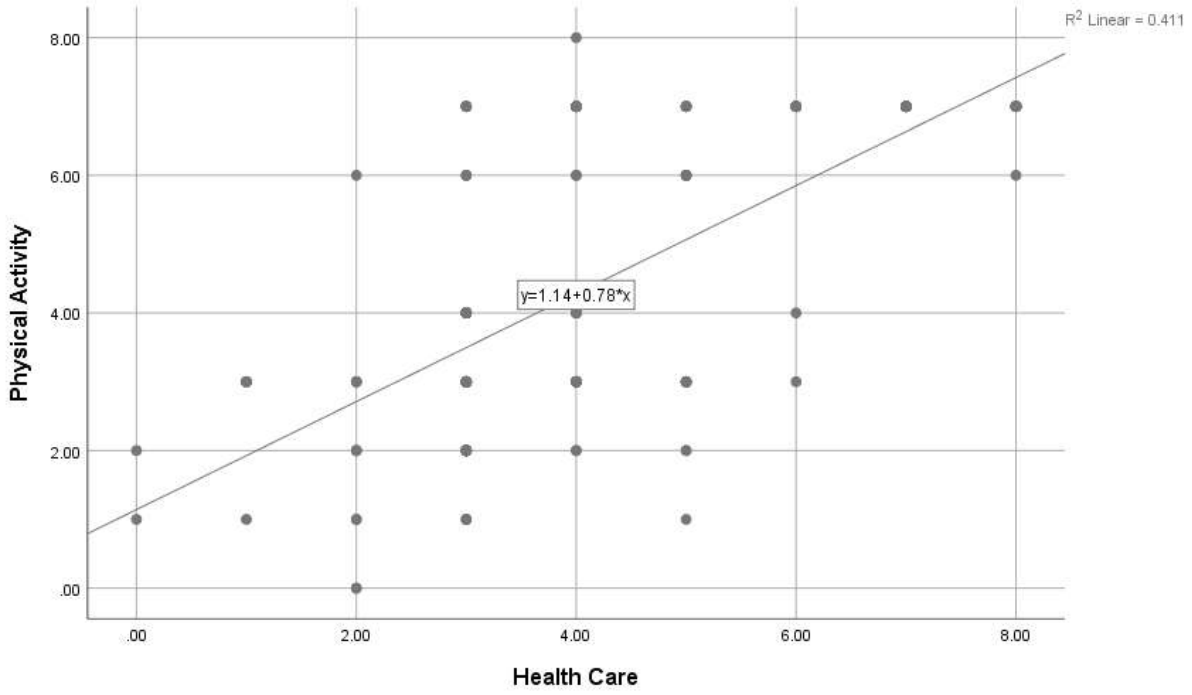

Figure (): Correlation between physical activity and health care

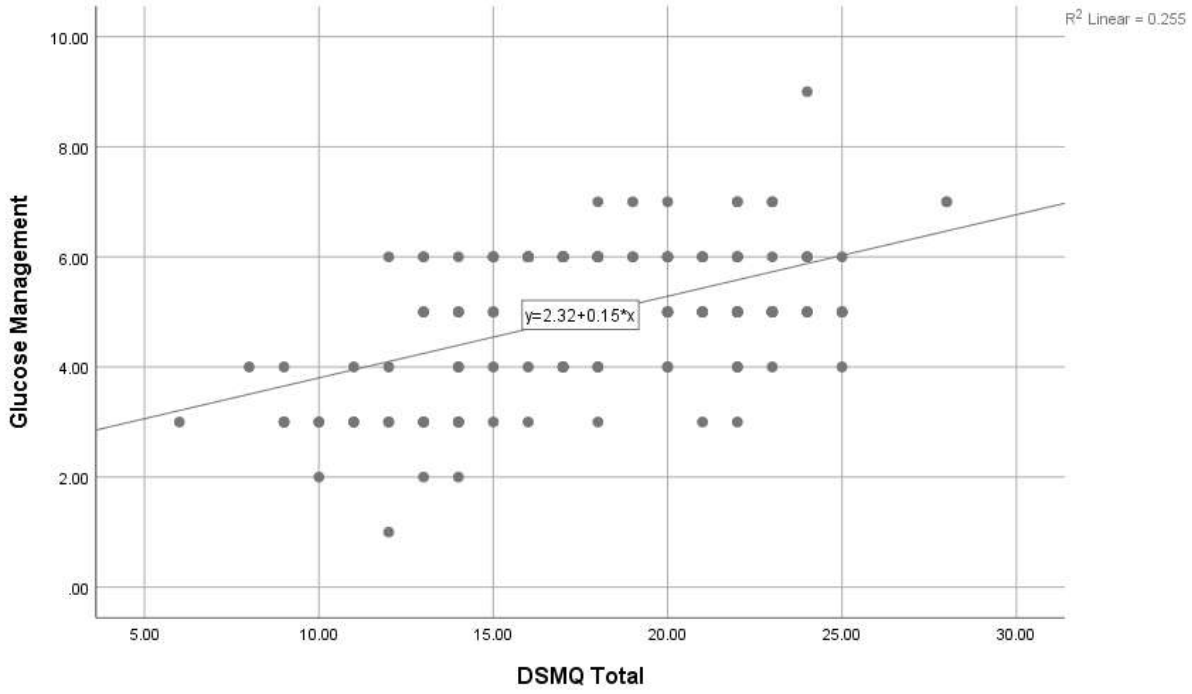

Figure (): Correlation between DSMQ total and glucose management

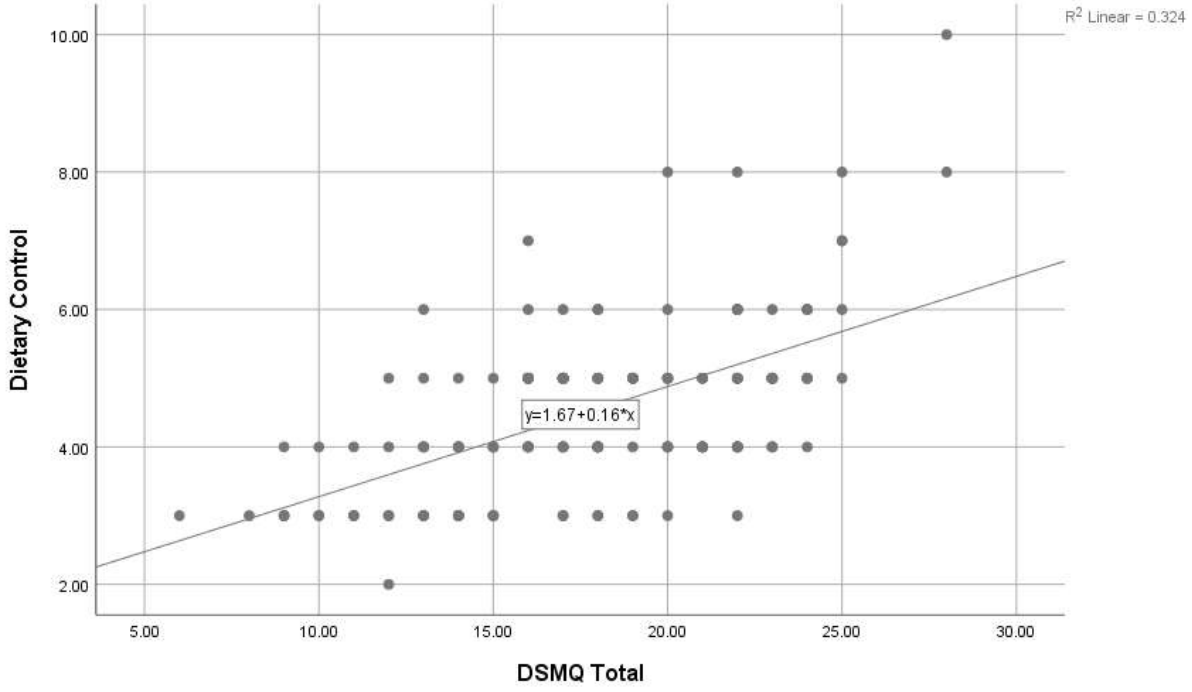

Figure (): Correlation between DSMQ total and dietary control

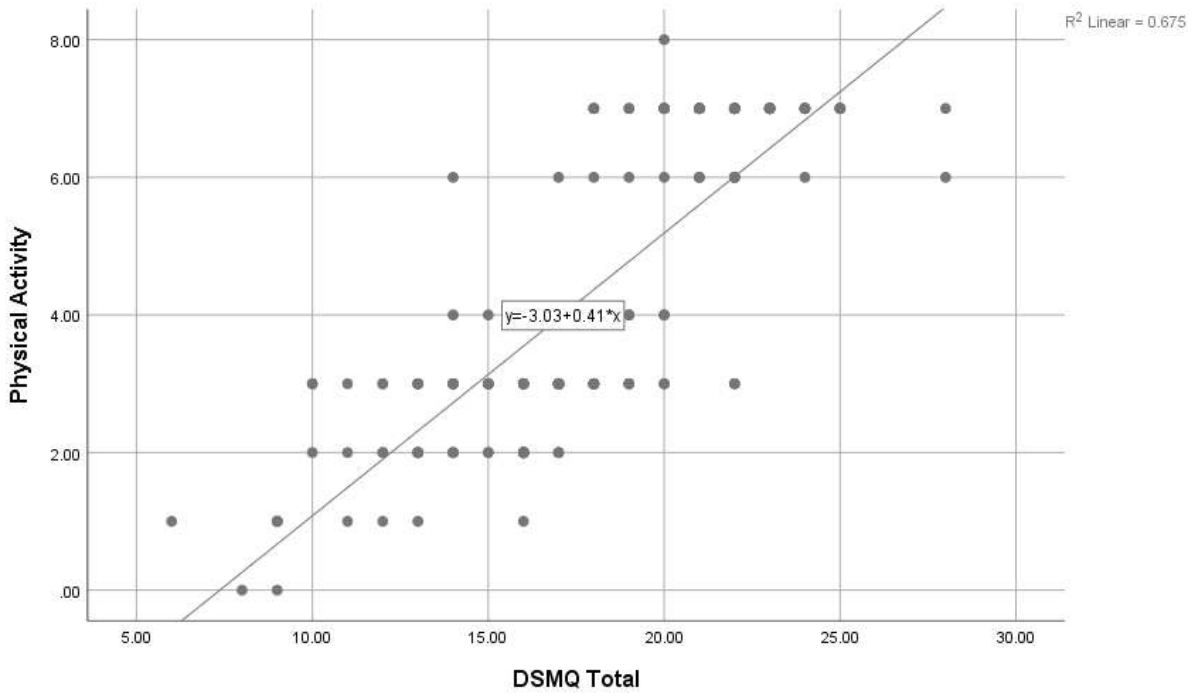

Figure (): Correlation between DSMQ total and physical activity

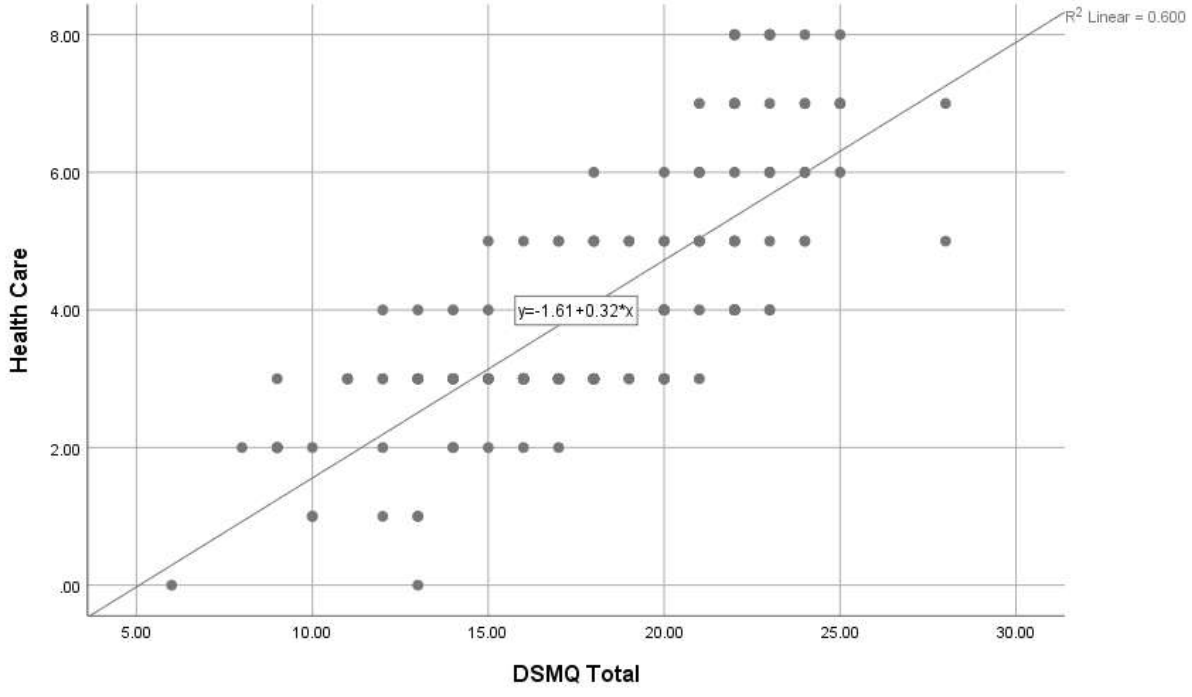

Figure (): Correlation between DSMQ total and health care

Table (9): Correlation of DSMQ domains and total with gender:

Gender		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Male	**Mean**	4.60	4.53	3.79	3.97	17.02
	S. D	1.34	1.17	2.01	1.86	4.48
Female	**Mean**	5.23	4.55	4.69	4.12	18.51
	S. D	1.17	1.27	2.22	1.72	4.17
P-value		0.005*	0.9٣٨	0.015*	0.٧٩٣	0.0٦٦

***:** P-value≤0.05 is significant

Glucose management, and physical activity score were statistically significantly higher in females than males. Glucose management, and physical activity score means were 5.23± 1.17, and 4.69±2.22 in females, and 4.60 ± 1.34, and 3.97± 2.01 in males respectively.

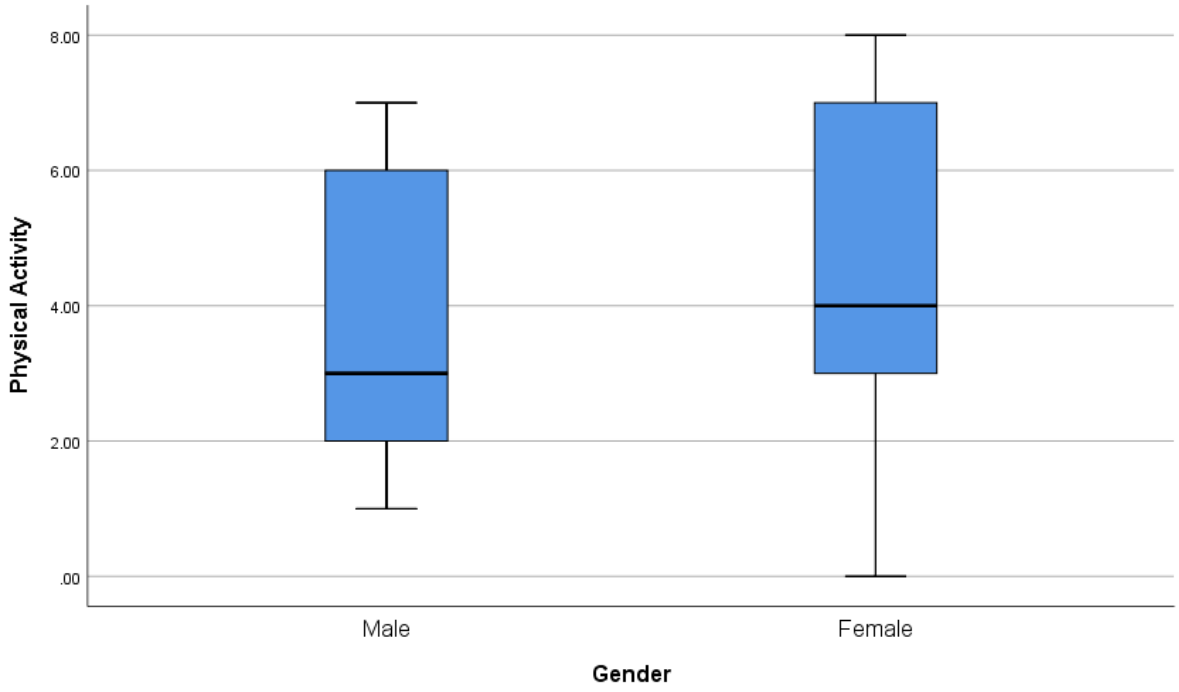

Figure (): Correlation of physical activity domain score with gender

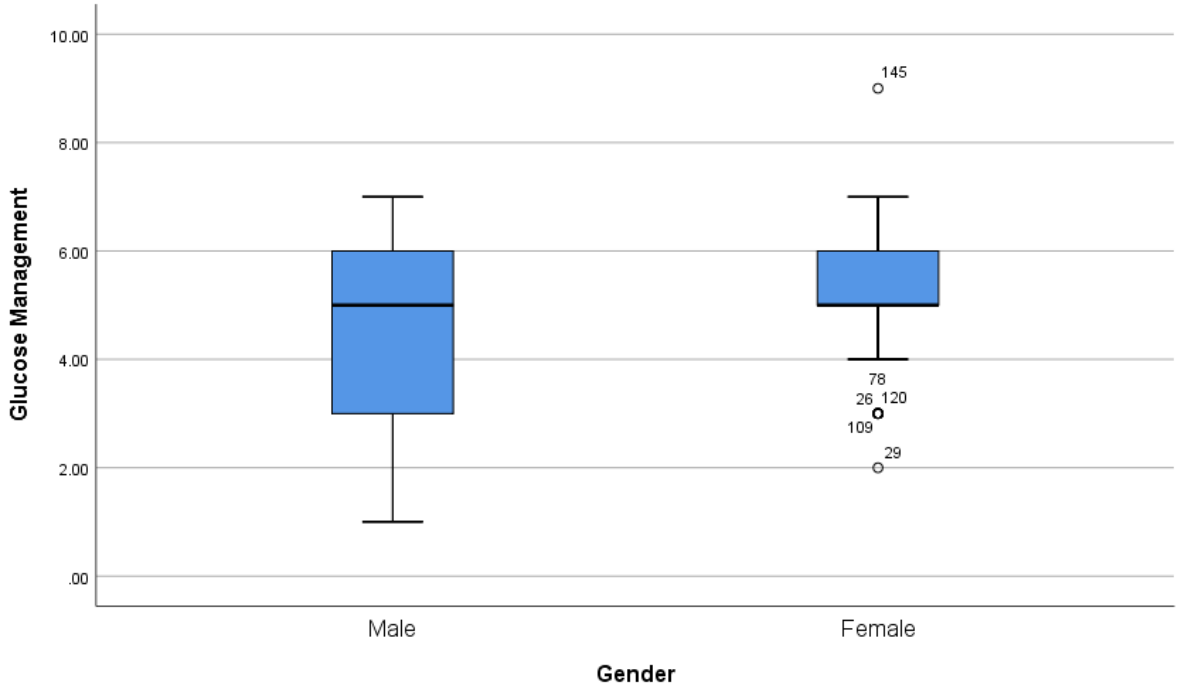

Figure (): Correlation of glucose management domain score with gender

Table (10): Correlation of DSMQ domains and total with residence:

Residence		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Rural	**Mean**	4.64	4.36	4.97	4.54	18.39
	S. D	1.18	1.02	2.24	2.02	4.64
Urban	**Mean**	5.20	4.66	3.90	3.74	17.58
	S. D	1.29	1.34	2.04	1.53	4.14
P-value		0.00٢*	0.18٨	0.003*	0.0١٣*	0.٠٩٢

***:** P-value≤0.05 is significant

Glucose management, and physical activity scores were statistically significantly higher in urban than rural. Glucose management, and physical activity score means were 5.20± 1.29, and 4.97±2.24 in urban, and 4.64 ± 1.18, and 3.90± 2.04 in rural respectively. But as regards health care use score, it was statistically significantly higher in rural than urban. Health care use score mean was 4.54 ± 2.02 in rural and 3.74±1.53 in urban respectively.

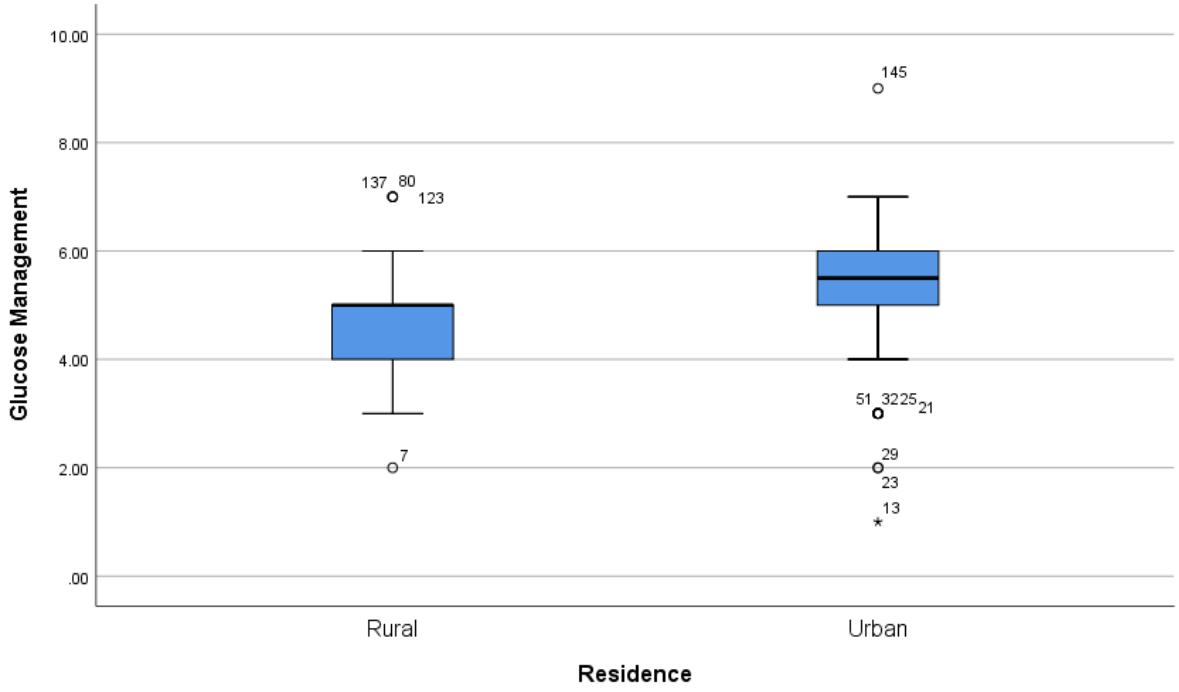

Figure (): Correlation of glucose management domain score with residence

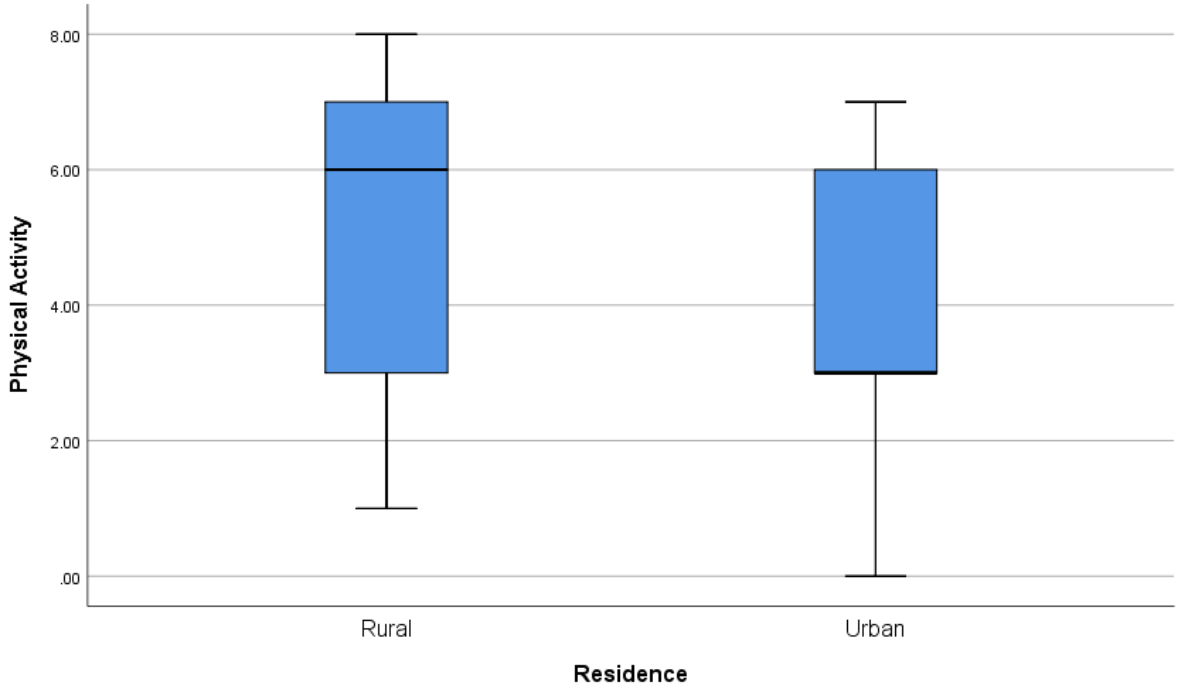

Figure (): Correlation of physical activity domain score with residence

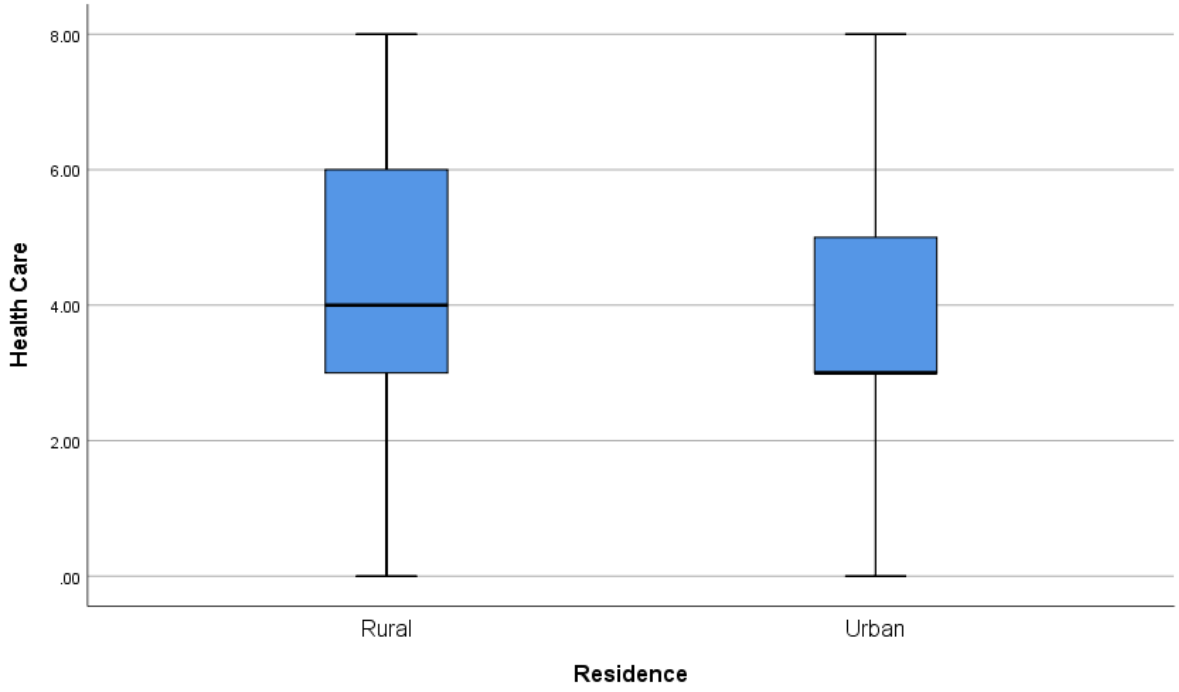

Figure (): Correlation of health care domain score with residence

Table (11): Correlation of DSMQ domains and total with faculty:

Faculty		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Scientific	**Mean**	4.86	4.55	3.31	3.43	16.37
	S. D	1.43	1.24	1.49	1.36	3.81
Literary	**Mean**	5.03	4.54	4.83	4.37	18.67
	S. D	1.20	1.22	2.29	1.88	4.42
P-value		٠.٧٧٩	٠.٧٩٦	<0.001**	٠.٠١٠*	٠.٠٠١*

***:** P-value≤0.05 is significant

Physical Activity, Health Care use, and DSMQ Total scores were statistically significantly higher in literary than scientific faculty. Physical Activity, Health Care use, and DSMQ Total scores means were 3.31± 1.49, 3.43± 1.36, and 16.37±3.81 in scientific faculty, and 4.83 ± 2.29, 4.37± 1.88, and 18.67± 4.42 in literary faculty respectively.

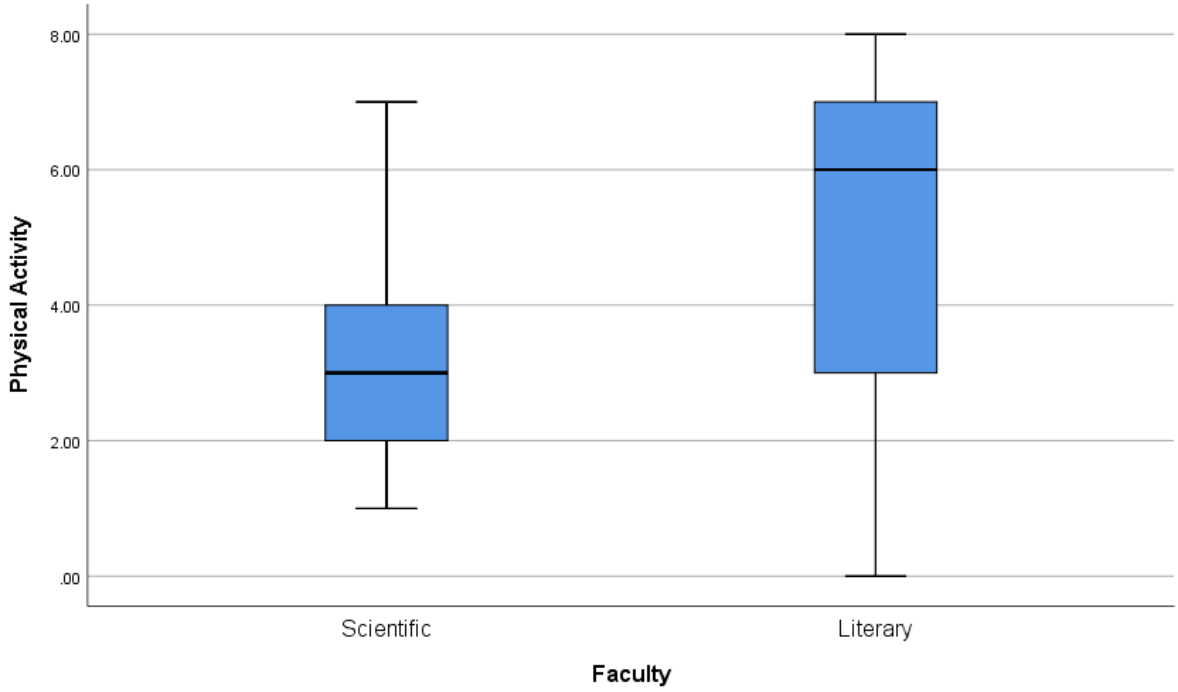

Figure (): Correlation of physical activity domain score with faculty of participants

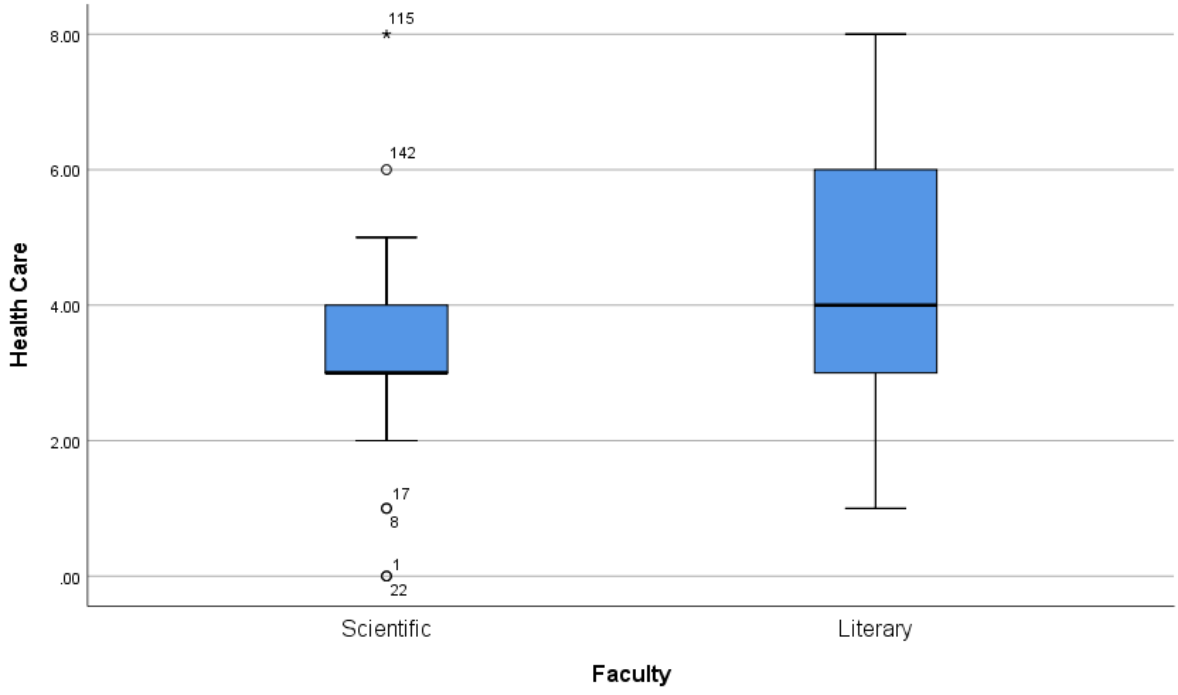

Figure (): Correlation of health care domain score with faculty of participants

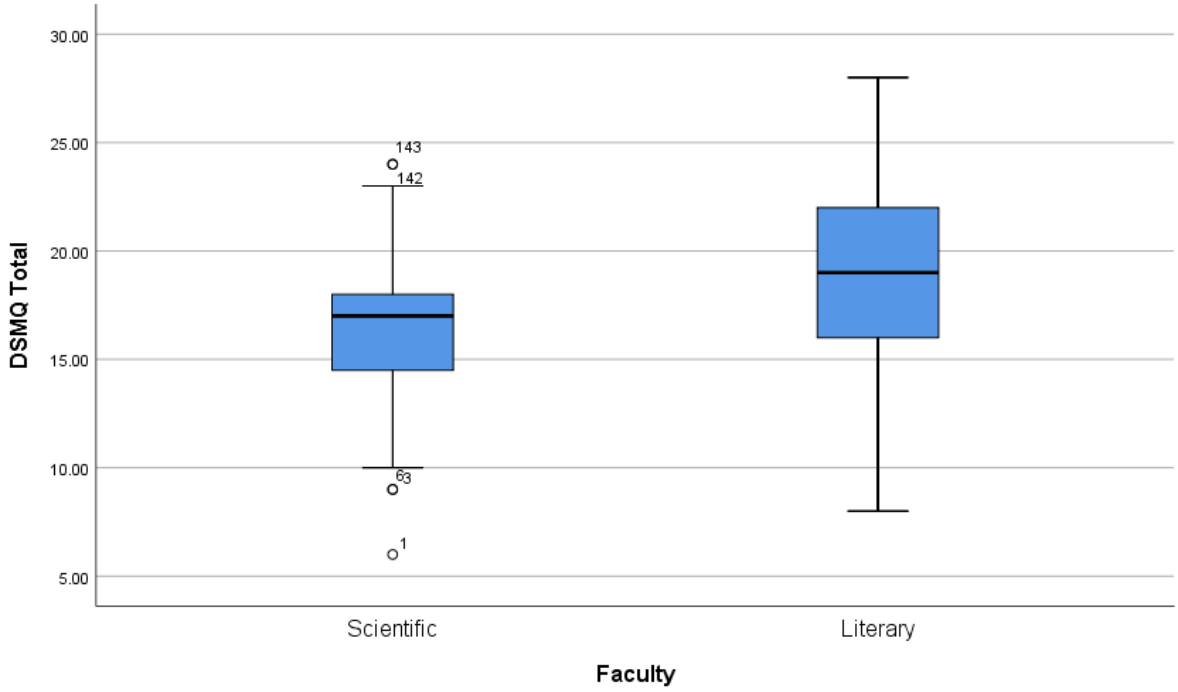

Figure (): Correlation of DSMQ score with faculty of participants

Table (12): Correlation of DSMQ domains and total with grade:

Grade		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Grade 1&2	Mean	4.89	4.60	4.33	4.27	18.03
	S. D	1.26	1.17	2.26	1.89	4.40
Grade 3&4&5	Mean	5.09	4.47	4.33	3.77	17.72
	S. D	1.31	1.31	2.08	1.58	4.30
P-value		0.٣٦٥	0.٢٠٢	0.988	0.٠٨٨	0.٤٣٧

There was no correlation between the grade of participants and the domains of the DMSQ.

Table (13): Correlation of DSMQ domains and total with work beside studying:

Do you work beside studying		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Yes	Mean	4.81	4.27	4.38	3.78	17.24
	S. D	1.43	0.90	2.13	1.83	4.61
No	Mean	5.03	4.63	4.31	4.15	18.11
	S. D	1.23	1.30	2.20	1.76	4.26
P-value		0.205	0.166	0.717	0.189	0.383

There was no correlation between the work beside studying of participants and the domains of the DMSQ.

Table (14): Correlation of DSMQ domains and total with smoking:

Are you a smoker		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Yes	Mean	4.62	4.46	4.46	4.92	18.38
	S. D	1.12	1.05	2.15	2.22	4.33
No	Mean	5.01	4.55	4.31	3.98	17.86
	S. D	1.29	1.24	2.19	1.72	4.37
P-value		0.212	0.827	0.746	0.115	0.616

There was no correlation between smoking habit of participants and the domains of the DMSQ.

Table (15): Correlation of DSMQ domains and total with chronic diseases other than diabetes:

Do you suffer from any chronic diseases other than diabetes		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Yes	Mean	5.20	5.10	3.80	3.60	17.80
	S. D	1.55	1.20	1.75	1.90	3.55
No	Mean	4.96	4.50	4.36	4.09	17.91
	S. D	1.26	1.22	2.20	1.77	4.41
P-value		0.600	0.081	0.578	0.573	0.790

There was no correlation between the chronic diseases of participants other than diabetes and the domains of the DMSQ.

Table (16): Correlation of DSMQ domains and total with complications of diabetes:

Do you suffer from any complications of diabetes		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Have complications	Mean	4.55	4.64	4.15	4.30	17.85
	S. D	1.30	1.06	2.14	1.74	4.22
Don't have complications	Mean	5.09	4.52	4.38	3.99	17.92
	S. D	1.25	1.27	2.19	1.79	4.40
P-value		0.015*	0.457	0.638	0.344	0.852

*: P-value≤0.05 is significant

There was glucose management domain and not having complications, where the score was higher in participants not having complications, 5.09±1.25 vs 4.55± 1.30 in participants not having and having complications respectively.

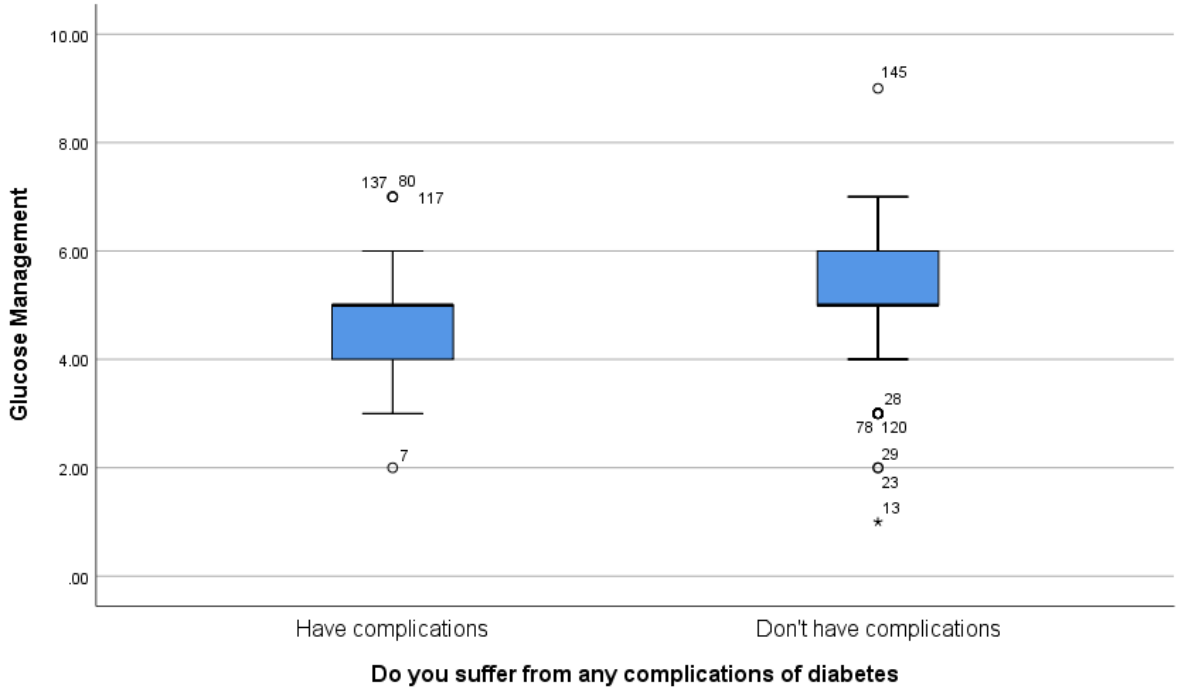

Figure (): Correlation of glucose management domain score with having any complications of diabetes

Table (17): Correlation of DSMQ domains and total with age and duration of diabetes:

		Glucose Management	Dietary Control	Physical Activity	Health Care use	DSMQ Total
Age	r	0.069	-0.044	-0.034	-0.053	-0.014
	P	0.397	0.586	0.677	0.517	0.864
Duration of diabetes (year)	r	-0.121	0.07	0.006	0.079	0.007
	P	0.137	0.389	0.942	0.333	0.932

r: correlation coefficient p: p-value

There was no correlation between the age, and duration of diabetes (year) of participants and the domains of the DMSQ.