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Nutritional assessment for female students aged 19 – 25 years diagnosed with Irritable Bowel Syndrome in Taibah University in Al-Madinah Al-Munawarah.

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Abstract

Irritable bowel syndrome (IBS) is one of the common digestive system diseases.Thisstudy aimed at assessment of the nutritional status of IBS diagnosed female students aged 19 – 25 years at Taibah University and to compare it to that of international recommendations. A Cross-Sectional study was conducted on 75 female University students. Each subject completed an estimated, three-day dietary record. The data were analyzed using a computerized food analysis program (diet organizer). Descriptive analysis (mean, standard deviation, frequency distribution, and correlation coefficient) was performed by the Statistical Package of Social Science (SPSS).

It was found that the majority had normal BMI (61.3%), followed by (21.3%) above normal, and (17.3%) below normal.Most of micro and macronutrients are deficient in subjects such as (carbohydrate, energy, vitamin D, fiber, iron, calcium). The most foods that increase IBS symptoms is spicy, fried food and coffee.

In Conclusion, The IBS subjects in this study consumed diets that were deficient in macronutrients, micronutrients and total energy compared with DRI (dietary reference intake) and RDA (recommended dietary allowances). It is recommended to promote nutritional guidence for those pateints.

Introduction

Irritable bowel syndrome (IBS) is a common, long-term condition of the digestive system. It can cause bouts of stomach cramps, bloating, diarrhea and/or constipation***(NHS, 2017)***. Structural abnormalities, tissue damage, or other organic explanations are typically absent in IBS. Therefore, this condition is traditionally classified as a functional gastrointestinal disorder. Due to significant associations with anxiety, depression, and other psychiatric conditions, IBS has often been considered to be a psychosomatic disorder.

Irritable bowel syndrome (IBS) is characterized by chronic intermittent abdominal pain and associated diarrhea (IBS-D), constipation (IBS-C), or both. Several studies of patients with IBS suggest that this disorder aggregates in families, and thus, appears potentially heritable***(Saito, 2011)***.

IBS can significantly impact patient function and quality of life. Unfortunately, studies identified more co-morbidity among IBS patients of both genders, compared to matched controls in the general population. Patients with IBS were particularly more worried about having a serious disease than their control group***(Faresjö et al., 2013)***.

Although diet has traditionally been considered of minor importance to IBS pathogenesis, most IBS patients believe that certain foods contribute to their symptoms***(Schoenfeld, 2016)***. Indeed, a number of mechanisms by which foods can trigger IBS symptoms have been suggested, including food allergies, food intolerance, exaggerated physiologic responses to food ingestion, and interactions with the microbiota. **Chey et al., (2015)** conducted research results showed that nearly two-thirds of IBS patients their symptoms are related to food. The pathogenic mechanism by which food induces IBS symptoms remains unclear, but it includes visceral hypersensitivity, altered motility, abnormal colonic fermentation, and sugar malabsorption, all of which lead to increased gas production and luminal distention***(Simren et al., 2001)***.

In one study the dietary intake of patients with irritable bowel syndrome was assessed and the result was that fat, saturated fatty acid, phosphorus and also vitamin A, E and C contents were above the RDA in the patients' daily food ration. The majority of IBS individuals did not meet recommendations for carbohydrate intake. Calcium and copper intake was below the Polish RDA. Insufficient vitamin B2 intake and excessive iron supply have been shown in male patients***(Prescha et al., 2009)***. The goal of this study was to assess the nutritional status of IBS in Taibah University.

Subjects and Methods

Study Design:

A cross-sectional study was conducted.

Setting :

The study was conducted At Taibah University in Al Madinah, Saudi Arabia. At the Faculty of Medical Sciences, Faculty of Health Sciences, Faculty of Family Sciences, Faculty of Medicine and Nursing and Department of Preparatory Year

Subject :

A subject of 75 female patients was recruited for the study. A total number of 80 patient's information were collected, 5 were excluded yielding a total number of 75 subjects included in the study

Inclusion criteria :

1.Females Aged from 19 years old to 25 years old.

2. Diagnosed with IBS currently.

3. Patients with no specific illnesses like lactose intolerance, milk allergy celiac disease and specific food allergy.

Ethical consideration:

The approval of study by the ethics committee of the Faculties was obtained. The patient's students were informed about the purpose of the study. They were informed that their participation is voluntary and that they have the right to withdrawal at any time.

Methodology:

1. Interview questionnaire:

Interview with subjects to taking information about;

a) Age of the subject, Patient's medical history; causes of IBS, symptoms before diagnosis and after diagnosis, medication that use or supplements, family history of IBS.

b) Dietary history; dietary habits and dietary recall

i. Dietary habits including; eating all meals of day, eating meals in their times, eating at restaurants or from restaurants, eating meals with family, drinking of soft drinks, following special diet, the amount of water that consumed and doing of exercises and for how long.

ii. The 24 hours' diet recalls for two days; The 24 diet recalls are relatively quick assessment modalities to obtain the most recent information about food intake. 24 hours' diet recall that involve detailed information about all foods and beverages, including meals and snacks which consumed by the respondent in the past 24 hours for two days from morning to evening of the previous two day (one week day and another weekend day) and also take the portions of meals, and the time. Using Household measures and standard units to describing amounts of foods which consumed. The 24 hours' recall analyzed by using Diet organizer program.

2. Anthropometric measurements:

a) Weight:

We measured patient's weight by using electric scale and stadiometer.

b) Height:

Height was measured by using stadiometer.

C) Body mass index (BMI):

The Body mass index was calculated categorized according to the patient's current weight in kilogram (Kg) divided by height in meter square (m2). Patients were categorized to the WHO criteria

(underweight: < 18.5, desirable weight: 18.5 to 24.9, overweight: 25 to 29.9, obese: ≥ 30)***NIH (1998)***.

D) Waist circumference:

Waist circumference was measured by using flexible non-stretchable measure tape. Waist circumference was measured in centimeters at the midpoint between the button of the ribs and the top of the iliac crest. Patients were categorized to ≥ 80 cm at risk and ≥ 88 cm at high risk.

Statistical Analysis

Descriptive analysis (mean, standard deviation (SD), frequency distribution, and correlation coefficient) was performed by the Statistical Package of Social Science (SPSS) version (20). The minimal level of significance will set at P < 0.05***(Nie et al., 1975)***.

Results

Characteristics of the subjects:

The results on table (1) showed that (78.7%) of the subjects were suffering from the symptoms after eating and with stress, while (8%) were suffering from the symptoms after eating only and (13.3%) were suffering from the symptoms with stress. Type of food that cause IBS symptoms (38.7%) was spicy food, (13.3%) was fried food, (6.7%) was caffeinated drinks, (8%) were spicy food and caffeinated drinks and (20%) was others.

It could be noticed that (65.3%) of the sample were drinking soft drinks /energy drinks per month and (9.3%) drink once a month, (29.3%) drink 3 times a month, (28%) drink five and more/ month. According to drinking water per day (42.7%) of the sample drink one

to two cups of water, (48%) three to five cups, (9.3%) eight to ten cups. According to exercise performance the results showed that (44%) do exercise, (36%) do an aerobic exercise, (2.7%) do resistance exercise and (5.3%) do both of them.

Daily energy and nutrient intake of sujects:

The results on table (2) showed that most of the patients had energy (85.4%), folic acid (80%), vitamin D (96%), vitamin A (82.6%), magnesium (78.6%), zinc (81.3%), potassium (98.6), iron (81.3%), calcium (84%), fiber (89.4%), pantothenic acid (72%) and polyunsaturated fatty acids (66.6%) intake were under RDA. While selenium (50.6%) was above the RDA level of most patients.

Anthropometric measurements:

This table represent the BMI of the subjects where the majority had normal BMI (61.3%), followed by (21.4%) Above normal, and (17.3%) below normal.

On the other hand the waist circumference results were: (77.4%) normal and (22.6%) above normal.

Classification of body mass index:

Table (4) represents the BMI of the studied subjects where the majority had normal BMI (61.3%), followed by (17.3%) underweight, (12%) overweight and (9.4%) obese.

Correlation coeficients:

Weight was strong positively significant correlated with sodium intake ($P<0.005$), Weight were strong positively significant correlated with Vitamin A intake ($P<0.004$),

Weight were positively significant correlated with age($P<0.035$).

Age was strong positively significant correlated with Vitamin A intake(P<0.001),
Age were positively significant correlated with Vitamin C intake(P<0.047),
Age were positively significant correlated with Pantothenic acid intake(P<0.033),
Age were positively significant correlated with magnesium intake(P<0.021),
Age were positively significant correlated with Zinc intake(P<0.031),
Age were strong positively significant correlated with water intake(P<0.002).
BMI were positively significant correlated with Polyunsaturated fat intake(P<0.031),
BMI were positively significant correlated with sodium intake(P<0.037),
BMI were positively significant correlated with Vitamin intake(P<0.019).

Discussion

Patients with irritable bowel syndrome usually suffer from abdominal pain associated with disturbed bowel habits like constipation or diarrhea or both ***(Prescha et al., 2009)***. A diet has also been considered to play a role in the pathogenesis of IBS ***(Alpers, 2006).***

Ligaardenet al., (2012)showed low intake of vitamin B6 in patients with IBS. The results showed deficiencies in energy, fat, carbohydrate, fiber, calcium, iron, potassium, zinc, magnesium, vitamin A, thiamin, vitamins C, B6, B12, folic acid, Vitamin D, Vitamin E, polyunsaturated fat and pantothenic acid intake of IBS female

university student. This can discuss the prevalence of diseases (anemia, vitamin D deficiency, polycystic and others) between study subjects. These deficiences can discuss the need of the study sample for taking supplements like multivitamin, iron, analgesics and other (table1).

Nutritional deficiency for IBS patients may be due to several mechanisms like food intolerance, the abnormal immune reaction of food, altered colonic flora and alteration of GI physiology after eating ***(Alpers, 2006)***. It may also refer to patient's elimination for specific food product and meals and inadequate intake of important food components ***(Prescha et al., 2009)***.

Data on table (1) were in line with these observations. It showed that the intake of spicy food is prevalent (38.7%) in the study sample, which may enhance IBS. Prevalence of diarrhea, constipation and both may be a way for nutritional deficiencies reported in the present investigation. Spread of eating meals outdoors, especially fast food, one or more times/week (93.7% of the total subjects) with the possibility of the contamination may be another way for IBS enhancement. Most of the subjects consume one or two (42.7%) or three to 5 (48%) of water cups daily, these amounts of water intake are not adequate to prevent constipation associated IBS. Exercise practicing (44% of the total subjects) may be beneficial in preventing constipation, however, when it is associated with little water intake, it may aggravate constipation.

The role of the diet in the development of IBS symptoms was investigated. A large population of IBS patient complains of subjective intolerance to various food***(Simren et al., 2001)***. Non-coeliac gluten sensitivity (NCGS) has recently received attention from

the mass media and the general public and has become confused with the popular speculation that the high carbohydrate content of wheat is responsible for negative health aspects such as obesity***(Davis, 2014).***NCGS is defined as having gastrointestinal and extra-gastrointestinal IBS-like symptoms without coeliac disease or wheat allergy, but with the symptoms being relieved by a gluten-free diet (GFD) and relapsing on gluten challenge***(Lundin, 2014 and Czaja-Bulsa, 2015).***It was reported that the gastrointestinal symptoms consistently and significantly improved when consuming a diet with reduced fermentable oligo-, di-, monosaccharides and polyols (FODMAPs), and these symptoms were not worsened by either a low- or high-dose challenge with gluten. It, therefore, seems that the carbohydrate content (fructans and galactans) of wheat rather than gluten is responsible for triggering NCGS symptoms***(Biesiekierski et al., 2014)***.The basic description of NCGS is the same as that of IBS. both NCGS and IBS patient have the same gastrointestinal and extra-gastrointestinal symptoms that are triggered by wheat consumption***(Catassi et al., 2013)***.

The triggering of symptoms in IBS patient by certain foodstuff has been attributed to indigestible and poorly absorbed short-chain carbohydrates, FODMAPs***(Barrett et al., 2010; Gibson and Shepherd, 2010 and Barrett and Gibson, 2012)***.

A significant proportion of their carbohydrates eaten the distal small intestine and colon, where they exert osmotic effect in the large intestine lumen, increasing it water content and providing a substrate for bacterial fermentation, with consequent gas production ***(Marcason, 2012 and Shepherd et al., 2013).***It's of interesting to mention that data of table 1 showed that most of IBS individuals (90.7%) and (88%) were suffering from gases before and after

diagnosed by IBS. The produced gas cause abdominal distention and abdominal pain/discomfort. FODMAPs have been found to trigger gastrointestinal symptoms in IBS, and a low-FODMAPs diet reduces the symptoms and improves the patient quality of life***(Mazzawi et al., 2013)***Recent studies have shown that the mechanisms by which FODMAPs exert their effect are more complicated than originally thought. A low-FODMAPs diet appear to include a favorable change in the intestinal microbiota***(Halmos et al., 2014)***and gastrointestinal endocrine cells***(Mazzawi et al., 2014).*** The abnormalities in the gastrointestinal endocrine cells are considered to play a major role in the development of symptoms in IBS***(Camilleri, 2014)***

A low intake of dietary fiber was initially believed to be the cause of IBS***(Ford et al., 2008).***The increase in dietary fiber intake in IBS patient has been found to increase abdominal pain, bloating abdominal distension. treatment of IBS with increased fiber intake had no improvement in symptoms compared to placebo or a low – fiber diet***(Francis and Whorwell, 1994).***However, it has been reported that water-soluble fiber but not insoluble fiber improves the symptoms***(Bijkerk et al. , 2009)***.

According to **Jelliffe*, (1966)*** the standard normal female adult weight of 156 cm tall must be 51.7 kg.The average weight of female under investigation is 55.5 kg which is very near to the standard occasionally, most of the sample (61.3) had normal BMI.

Pickett-Blakely, (2014)showed some induction in IBS patients. Altered small bowel and colonic transit in obese persons may explain IBS symptoms, but the data in this area are limited. ***Moos et al., (1982)***reported shorter total gastrointestinal transit times

in obese rats compared with their lean counterparts, while ***Kielyet al., (2005)*** reported longer overall transit times in leptin-deficient obese mice compared with their lean counterparts.***Basiliscoet al., (1989)***reported delayed orocecal transit times in obese subjects using the lactulose breath test, while a later study failed to reproduce this finding using scintigraphy. **Sadiket al., (2010)**, however, reported an inverse correlation between BMI and colonic transit time in subjects with IBS.

However, ***Eswaranet al., (2011)***reported an inverse correlation between BMI and colonic transit time in subject with IBS. Low fiber and high carbohydrate diet are linked to obesity in IBS patients. The present investigation showed that subjects consumed low fiber, low carbohydrate but high protein diet, which might be the cause for normal anthropometricmeasurements in IBS females. IBS patients tend to avoid cretin food items that are associated with the onset of their symptoms. There has been some concern that the onset of IBS symptoms upon ingesting certain food would reduce the amount of food consumed and thereby lead to malnutrition***(Monsbakken et al., 2006).***

However, where an association between low BMI and IBS has been reported in another study ***(Kubo et al., 2011)***, most of IBS patients examined were either normal or overweight***(Simren et al., 2001).*** Which were in line with results of table (1).

Appetite is regulated by a large number of hormones, several of which are secreted by gastrointestinal endocrine cells. The gastrointestinal hormones exert their effects by acting upon the appetite, control center in the hypothalamus***(Choaudhri et al., 2006).***

Conclusion

The study shows that most patients with irritable bowel syndrome consume diets that were deficient in energy and carbohydrates, micronutrients (vitamin D, vitamin E, iron, folic acid, calcium, magnesium and potassium) comparedwithRDA. 61.3% of IBS females have normal BMI and the rest with abnormal BMI. There is lack in nutritional knowledge of IBS females that may helpthemto keep themselves in a state of good nutrition and to have normal healthy life.

Recommendations

1-IBS females should take adequate amounts of energy, macronutrients and micronutrients according to their needs.
2-There should be an Individual dietary guidance for the intake of low FODMAPs and insoluble fibers diet in combination with probiotics intake.
3- Regular exercise is recommended for IBS patients (2 hours and 30 minutes (150 minutes) of moderate-intensity aerobic activity (i.e., brisk walking) every week and muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).
4- Managing weight for those who under or overweight and those with normal weight, they should maintain their weight and avoid weight gain and overweight.
5- Encourage IBS patients to have good nutritional behavior such as eating three meals and snack containing fruits and vegetables.
6- Avoid food and beverages that increase symptoms of IBS such as (spicy, fried food and coffee)
7- Encourage IBS patients to increase their intake of water to normal range (2.7 L/ day) (8-10 cups/ day) to improve their health.

Table 1: Frequency distribution of characteristics of the subjects:

Variable		Frequency (n=75)	Percent %
Number of participants who has family history of IBS:	Yes	55	73.3%
	No	16	21.3%
	Don't know	4	5.3%
Other disease:	Yes	19	25.3%
	No	56	74.7%
If yes:	Anemia	4	5.3%
	V.D deficiency	3	4%
	Polycystic	1	1.3%
	others	11	14.7%
The Symptoms before diagnosed by IBS:	-Gases	68	90.7%
	-Diarrhea	7	9.3%
	-constipation	23	30.7%
	-Diarrhea with constipation	10	13.3%
	-mucous in feces	5	6.7%
	-Digestive disturbance after stress	54	72%
	Other symptoms	37	49.3%
The Symptom after diagnosed by IBS:	-Gases	66	88%
	-Diarrhea	8	10.7%
	Constipation	21	28%
	Diarrhea with constipation	10	13.3%
	mucous in feces	3	4%
	Digestive disturbance after stress	40	53.3%
	Other symptoms	41	54.7%
Time of IBS pain:	After eating	6	8%
	With stress	10	13.3%
	Both	59	78.7%

Contenue Table (1)

Type of food that cause IBS:	Spicy food	29	38.7%
	Fried food	10	13.3%
	Caffeinated drinks	5	6.7%
	Spicy food and Caffeinated drinks	6	8%
	other	15	20%
Supplemental and drug usage:	Yes	17	22.7%
	No	58	77.3%
If yes, type:	multivitamin	8	10.7%
	iron	3	4%
	Analgesics	4	5.3%
	Other	2	2.7%
Special diet for IBS:	Yes	9	12%
	No	66	88%
If yes, who describe:	Physician	0	0
	Nutritionist	2	2.7%
	Self-experience	9	12%
	Family or friends	0	0
3 meals intake:	No	21	28%
	Sometimes	34	45.3%
	Yes all	9	12%
	One only	2	2.7%
	Two lead	9	12%
Take care eating meal in time:	No	37	49.3%
	Sometime	31	41.3%
	Yes	7	9.3%
Taking meals with family:	Yes	39	52%
	No	4	5.3%
	Sometimes	31	41.3%
	Rarely	1	1.3%
Contenue Table (1)			
Eating meals out doors	No	5	6.7%
	One time/week	33	44%
	Two or three times / week	23	30.7%
	Four times or more	14	18.7%
Soft drinks / energy drinks	Yes	49	65.3%
	No	26	34.7%
How much drink/ monthly	One time	6	9.3%
	Three times	22	29.3%
	5 and more	21	28%
No. of water cups / day	One to two cups	32	42.7%
	3-5 cups	36	48%
	8-10 cups	7	9.3%
Exercise practicing:	Yes	33	44%
	No	42	56%
If yes, type of sports:	aerobics	27	36%
	Resistance	2	2.7%
	Both	4	5.3%

Table 2: The daily energy and nutrient intake of subjects (mean & SD):

Totally daily intake	Mean	S.D.	Below % (RDA)	Normal % (RDA)	Above % (RDA)
Energy (kcal)	1445.5	356.6	85.4	6.6	8
Protein (g)	54.8	9.1	21.4	48	30.6
Fat (g)	52.5	9.3	41.4	44	14.6
Carbohydrates (g)	195.5	51.9	68	25.3	6.7
Fiber (g)	13.8	2.7	89.4	2.6	8
Calcium (mg)	600.5	111.1	84	5.3	10.7
Phosphorus (mg)	892.6	141.6	34.6	25.4	40
Iron (mg)	10.4	2.5	81.3	13.4	5.3
Sodium (mg)	1661.9	349.5	50.6	8.4	41
Potassium (mg)	1883.7	250.9	98.6	1.4	-
Zinc (mg)	5.5	1.4	81.3	9.3	9.4
Magnesium (mg)	210.6	59.4	78.6	16	5.4
Vitamin A(µg)	2980.2	425.1	82.6	1.4	16
Thiamin (mg)	1.3	0.35	46.7	28	25.3
Contenue Table (2)					
Riboflavin (mg)	1.7	0.36	37.4	26.6	36
Niacin (mg)	21.1	3.6	28	20	52
Vitamin C(mg)	50.5	8.9	70.6	9.4	20

Contenue Table (2)

Vitamin B6 (mg)	1.5	0.33	40	28	32
Vitamin B12(µg)	2.5	0.41	50.6	18.6	30.8
Folic acid (µg)	236.9	36.8	80	13.4	6.6
Cholesterol (mg)	223.3	54.1	0	84	16
Vitamin D (µg)	1.01	0.19	96	1.4	2.6
Vitamin E (mg)	3.6	0.41	97.4	1.3	1.3
Sugars (g)	83.5	9.16	٠	69.4	30.6
Manganese (mg)	2.3	0.39	46.6	12	41.4
Copper (mg)	1.07	0.24	38.6	13.4	48
Selenium (µg)	66.4	12.39	28	21.4	50.6
Saturated fat (g)	18.6	2.63	٠	65.3	38.7
Monounsaturated fat (g)	16.6	1.58	-	-	-
Polyunsaturated fat (g)	13.6	2.04	66.6	8	25.4
Pantothenic acid (mg)	3.5	0.56	72	20	8

Table 3: Mean and SD for anthropometric measurement of studied subjects compared with standard.

Variables	mean	S.D.	Below %	Normal %	Above %
Weight (kg)	55.4907	12.28473	-	-	-
Height (cm)	156.68	6.658	-	-	-
BMI	22.529	4.6347	17.3	61.3	21.4
Waist circumference (cm)	73.4800	9.88906	٠	77.4	22.6

Table 4: Distribution of study subject according to BMI classification:

BMI classification	Number	Percentile (%)
Under weight	13	17.3
Normal	46	61.3
Over weight	9	12
Obese	7	9.4

Tables 5: correlation coefficient between weight and nutrient intake:

Correlation	P	R
Weight VS calorie	.613	.059
Weight vs CHO	.667	-.050
Weight Vs fat	.919	.012
Weight Vs protein	.346	.110
Weight vs Saturated fat	.405	.098
Weight Vs polyunsaturated fat	.060	.218
Weight Vs monounsaturated fat	.439	-.091
Weight Vs cholesterol	.914	.013
Weight vs fiber	.617	-.059
Weight vs sodium **	.005	.318
Weight vs potassium	.273	.128
Weight vs sugars	.881	-.018
Weight vs vitamin A **	.004	.327
Weight vs vitamin c	.208	.147
Weight vs calcium	.568	.067
Weight vs iron	.111	.186
Weight vs vitamin D	.091	.198
Weight vs vitamin E	.952	.007
Weight Vs thiamin	.060	.610
Weight vs riboflavin	.203	.149
Weight vs niacin	.864	.020
Weight vs vitamin B6	.680	.048
Weight vsfolate	.816	.027
Weight vs B12	.177	.158
Weight vs pantothenic acid	.168	.161
Weight vs phosphorus	.366	.106
Weight vs magnesium	.657	-.052
Weight vs zinc	.165	.162
Weight vs selenium	.271	.129
Weight vs copper	.302	-.121
Weight vs manganese	.617	.059

Weight vs water	.079	.204

**= Higly significant (P<0.01)

Tables 6: correlation coefficient between age and nutrient intake:

Correlation	P	R
Age Vs Weight *	.035	.244
Age vs height	.322	.116
Age Vs BMI	.068	.212
Age Vs waist	.106	.188
Age Vs Calorie	.838	-.024
Age Vs CHO	.821	-.027
Age Vs protein	.982	-.003
Age Vs fat	.839	-.024
Age Vs saturated fat	.356	.108
Age Vs polyunsaturated	.903	.014
Age Vs monounsaturated	.366	-.106
Age Vs cholesterol	.785	-.032
Age Vs fiber	.315	.118
Age Vs Sodium	.328	-.115
Age Vs potassium	.763	.035
Age Vs sugars	.885	-.017
Age Vs VA **	.001	.374
Age Vs VC *	.047	.230
Age Vs Calcium	.141	.171
Age Vs Iron	.614	.059
Age Vs Vitamin D	.054	.225
Age Vs Vitamin E	.601	.062
Age Vs thiamin	.414	.096
Age Vs Riboflavin	.586	.064
Age Vs niacin	.999	.000
Age VS Vitamin B6	.601	.061
Age Vsfolate	.130	.177
Age Vs Vitamin B12	.737	.040
Age Vs pantothenic acid *	.033	.246
Age Vs phosphors	.531	.073
Contenue Table (6)		
Age Vs magnesium *	.021	.267
Age Vs zinc *	.031	.249
Age Vs selenium	.370	.105
Age Vs copper	.137	.173
Age Vs manganese	.177	.158
Age Vs water **	.002	.348

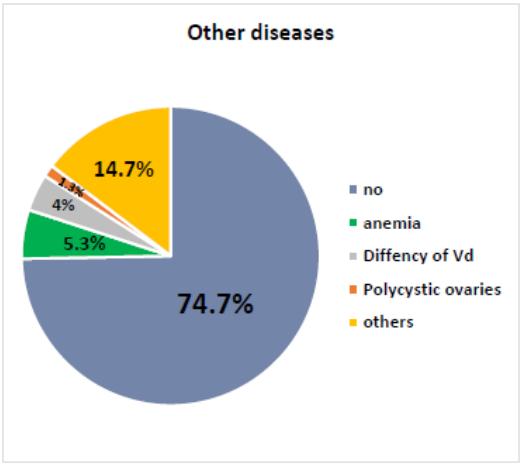
* = Significant (P<0.05)

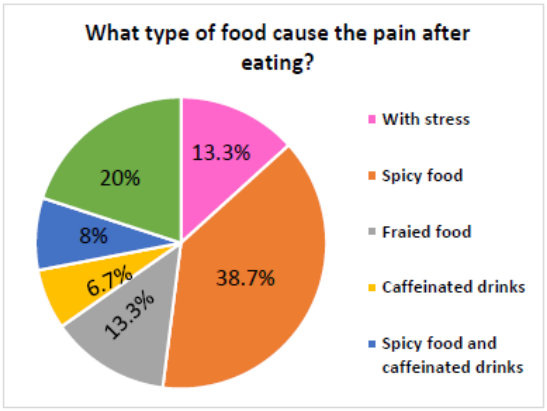
**= Higly significant (P<0.01)

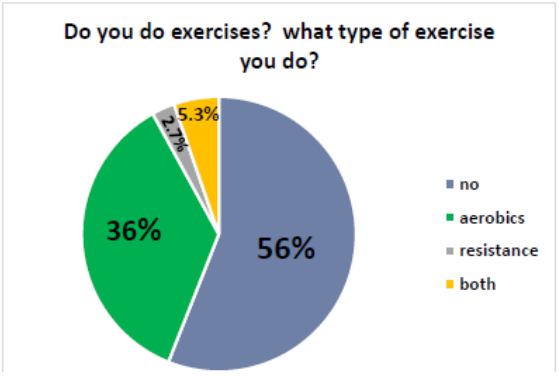
Tables 7: correlation coefficient between BMI and nutrient intake:

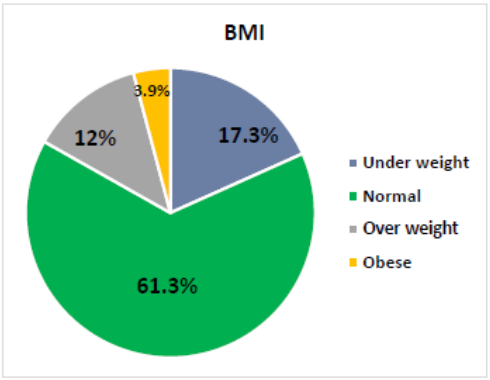
Correlations	P	R
BMI Vs Calories	.626	.057
BMI Vs CHO	.774	-.034
BMI Vs Protein	.952	-.007
BMI Vs Fat	.768	.035
BMI Vs Saturated	.286	.125
BMI Vs polyunsaturated *	.031	.250
BMI Vs monounsaturated	.405	-.098
BMI Vs Cholesterol	.885	-.017
BMI Vs fiber	.769	-.035
BMI Vs sodium *	.037	.241
BMI Vs Potassium	.317	.117
BMI Vs Sugars	.660	.052
BMI Vs VA *	.019	.271
BMI Vs VC	.443	.090
BMI VsCa	.931	.010
BMI Vs iron	.070	.210
BMI Vs VD	.074	.209
BMI Vs VE	.867	-.020
Contenue Table (7)		
BMI Vs Thiamin	.863	.020
BMI Vs Riboflavin	.326	.115
BMI Vs niacin	.720	-.042
BMI Vs B6	.850	.022
BMI VsFolate	.606	-.060
BMI Vs B12	.155	.166
BMI Vs Pantothenic acid	.613	.059
BMI Vs phosphorus	.691	.047
BMI Vs magnesium	.604	-.061
BMI Vs zinc	.548	.070
BMI Vs selenium	.778	.033
BMI Vs copper	.548	-.071
BMI Vs manganese	.975	.004
BMI Vs water	.534	.073

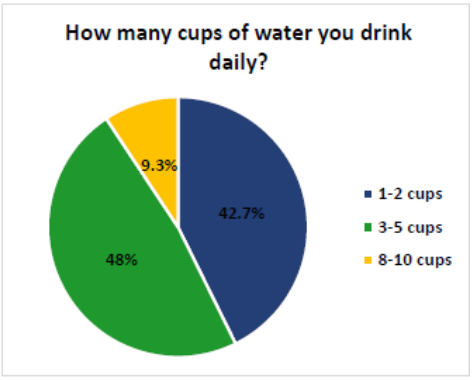
* = Significant (P<0.05)

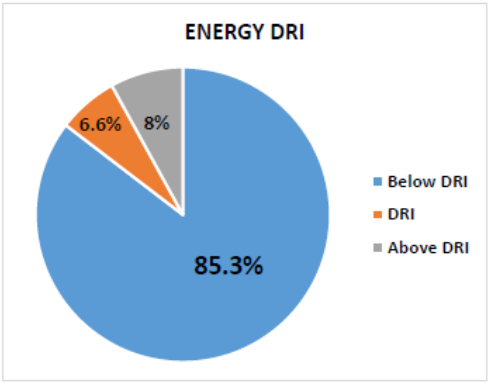

Other diseases
14.7%
4%
5.3%
74.7%
no
anemia
Diffency of Vd
Polycystic ovaries
others

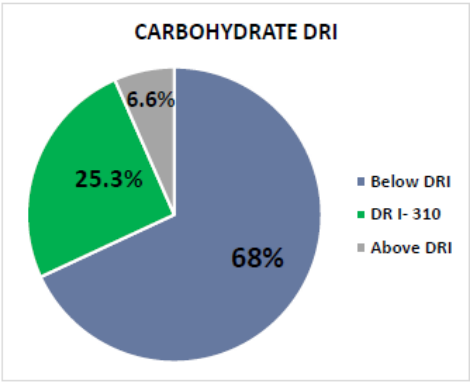

What type of food cause the pain after eating?
13.3%
20%
8%
6.7%
13.3%
38.7%
With stress
Spicy food
Fraied food
Caffeinated drinks
Spicy food and caffeinated drinks

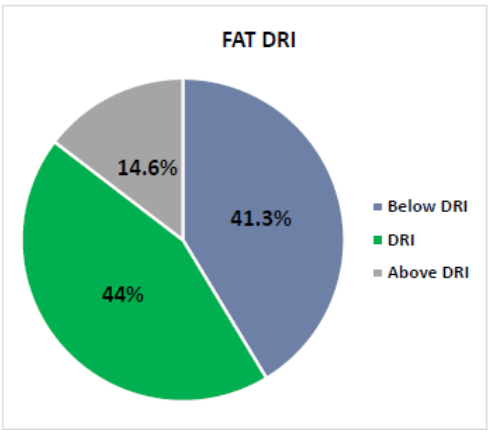

Do you do exercises? what type of exercise you do?
5.3%
2.7%
36%
56%
no
aerobics
resistance
both

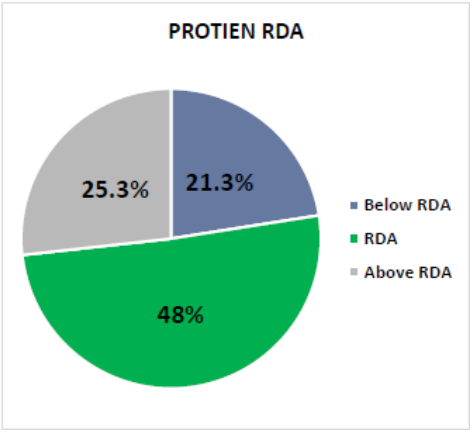

BMI
17.3%
61.3%
12%
3.9%
Under weight
Normal
Over weight
Obese


How many cups of water you drink daily?
42.7%
48%
9.3%
1-2 cups
3-5 cups
8-10 cups


ENERGY DRI
85.3%
6.6%
8%
Below DRI
DRI
Above DRI


CARBOHYDRATE DRI
68%
25.3%
6.6%
Below DRI
DR I- 310
Above DRI


FAT DRI
41.3%
44%
14.6%
Below DRI
DRI
Above DRI


PROTIEN RDA
21.3%
48%
25.3%
Below RDA
RDA
Above RDA

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تقييم الحالة الغذائية لطالبات جامعة طيبة المشخصين بمرض القولون العصبى والذين تتراوح أعمارهم من١٩-٢٥ عاماً فى المدينة المنورة

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الملخص العربي

يعد مرض القولون العصبي من أكثرأمراض الجهازالهضمي شيوعاً. تهدف هذه الدراسة إلى تقييم الحالة الغذائية لطالبات جامعة طيبة المشخصينب مرض القولون العصبي والذين تتراوح أعمارهم من ١٩-٢٥ عاماً. تم إجراء دراسة مقطعية ل ٧٥ طالبة مشخصة بمرض القولون العصبي من جامعة طيبة. أستخدم استبيان لجمع معلومات حول الحالة المرضية والتاريخ الطبي والغذائي للعينة محل الدرسة،وتم عمل التحليل الغذائي لهم. شملت القياسات الانثروبومترية:الوزن،الطول،مؤشركتلة الجسم ومحيط الخصر. أظهرت النتائجأن معظم عينة البحث (٦١,٣%) لديهن مؤشر كتلة جسم طبيعية. وجد نقص في الإستهلاك الغذائي للعديد من العناصر الغذائية (مثل الكربوهيدرات والطاقة وفيتامين د والألياف والحديد والكالسيوم) لأغلب عينة الدرسة. أشارت الدراسة الي أن الأطعمة التي سببت تفاقم أعراض القولون العصبي كانت الأطعمة الحريفة والمقلية بالإضافة الى القهوة. توصي هذه الدراسة بتعزيز الأرشاد الغذائي لهذه الفئة من المرضى.