

Survey of Sugar Intake among Al-Imam Mohammad IBN Saud Islamic University College of Medicine Students

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Abstract: This survey is a cross sectional Study about Sugar intake among Medical Students at the at Al- Imam university. The sample was Simple Random Sample from all the students in the college. We have used Questionnaire as our data collection tool questioning the consumption of Sugar, the relation with BMI, Physical Activity, Dental Health, and the presence of diseases in students and their first degree relatives. After collecting the data, we used the SPSS program V 20 for analysis. We found that 83.3% of the students have their income <3000 SR. Most of student even with low income they spent almost 40% of their money on food. Students above the normal BMI are 59.4% correlating with the decreased Physical Activity and the increased hours of watching TV and using PCs that they are highly related. We found Chocolate and soft drinks consumption are increased. Juice intake is slightly higher than the soft drinks intake. 50% of students eat fruits sometimes. We can't find the relation between Power drinks and BMI. Most of the students are healthy but they are susceptible due to family history. There is very poor concern from the students about their dental hygiene.

Keywords: Cross sectional Study about Sugar intake, BMI, Random Sample.

1. INTRODUCTION

Saudi Arabia has witnessed tremendous lifestyle changes over the past few decades, and sedentary lifestyles are becoming particularly prevalent among Saudi children and youth. Data from a limited number of studies indicate that 60% of Saudi children and 71% of young people do not engage in physical activity of sufficient duration and frequency. In addition, food consumption patterns have changed dramatically in the Eastern Mediterranean countries during the past four decades, and calorie-dense foods and sugar-sweetened beverages are becoming increasingly accessible to children and adolescents.

Objectives/ Specific Objective:

1. To determine the different effects of socio-economic status with the sugar intake levels.

To estimate the monthly income from students and how much they spend on their food.

2. To estimate the prevalence of overweight and Obesity.

Measuring of the BMI.

3. To evaluate the type of food consumed among Al-Imam College of Medicine Students:

To estimate how much chocolate are consumed daily.

To estimate how many soft drinks and power drinks the students consume daily.

To know how often fruits are consumed by the students daily.

To estimate how much sugar are usually added to Tea and Coffee daily.

To estimate the amount of juice intake daily.

4. To determine the levels of Physical activity:

To estimate the weekly practicing hours.

To estimate the number of hours spent in front of TV or Computer.

5. To list the different health condition among the students and their first degree relatives if present :

To list the types of diseases (DM , HTN , Cholesterol, CVS ...)

To correlate the prevalence of disease with increased sugar intake.

To mention the family history of similar disease.

6. To assess dental health among Al-Imam College of Medicine students and its relationship with the sugar intake levels.

To estimate how many visits to the dentist in the past year.

To estimate how many tooth decay does each student have.

2. LITERATURE REVIEW

This survey was commenced by a group of students at Al-Imam Mohammad bin Saud Islamic University, College of Medicine in Apr 2012 to provide information about the sugar intake among the Medical Students at the university. In this article, we gathered more than a dozen papers that talk about the same topic and tried our best to come up with the objectives. All the papers included were written in English.

In **Survey of Sugar Intake among children in Scotland**, they've found that the intake of NMES was particularly high in older children and those living in more deprived areas, mainly due to high consumption of non-diet soft drinks, confectionery, biscuits, cakes and pastries. The mean NMES intake was significantly higher in children who had been treated for dental decay suggesting that the high intake of NMES is likely to be contributing to dental disease.

From this study, we've come up with the questions in the questionnaire that is related to soft drinks consumption and dental caries.

It's noteworthy as well that they were concerned with the physical activity of the children in terms of contributing to the overall health. They have categorized the activities into 3 main categories which we will be using in our research.

Their categorizing method was as follows:

High: active for 60 minutes on 7 days in the last week.

Medium: active for 30-59 minutes on 7 days in the last week.

Low: active at a lower level or not active at all.

Regarding the article: Sugar consumption among Canadians of all ages by Kellie Langlois and Didier Garriguet, they've talked about the amount of sugars that the Canadian consume daily an average of 110 grams (26 teaspoons) of sugar a day, approximately 20% of their total energy intake. While over 30% of this sugar came from vegetables and fruit, 35% came from the "other" foods category, which consists of items such as soft drinks, salad dressings and candy. Diabetics consume significantly less sugar than do non diabetics, but their average consumption exceeds the recommended level.

We have found that the consumption of soft drinks by men exceed those of women from the paper of Beverage consumption of Canadian adults by Didier Garriguet. Men aged 19 to 30, among whom regular soft drinks ranked third in terms of the percentage reporting consumption

In terms of obesity, the article in adults, what is the association between intake of sugar-sweetened beverages and body weight? Talked about that greater consumption of sugar-sweetened beverages is associated with increased body weight in adults.

Other evidence suggests that under isocaloric controlled conditions, added sugars, including sugar-sweetened beverages, are no more likely to cause weight gain than any other source of energy.

In the American Heart Association, we find the recommendations in the article: **Dietary Sugars Intake and Cardiovascular Health: A Scientific Statement From the American Heart Association** by (Rachel K. Johnson et al) that say Most American women should eat or drink no more than 100 calories per day from added sugars, and most American men should eat or drink no more than 150 calories per day from added sugars.

And finally, we find in the paper : **Interrelationships of added sugars intake, socioeconomic status, and race/ethnicity in adults in the United States: National Health Interview Survey 2005** that talks about Race/ethnicity, family income and educational status are independently associated with intake of added sugars. Groups with low income and education are particularly vulnerable to diets with high added sugars. Differences among race/ethnicity groups suggest that interventions to reduce intake of added sugars should be tailored.

3. MATERIAL AND METHOD

Sampling:

Sample unit: Medical Students at the College of Medicine at Al- Imam University.

Sample Frame: list of all the students in the college that will be randomly selected by software.

Type of sample: Simple Random Sample

Type of Study: Cross sectional Study.

Data Collection Tool: Questionnaire (appendix1_)

4. RESULTS

We found that most of student even with low income (83.3% of the students have their income <3000 SR) they spent almost 40% of their money on food.

About the BMI result:

7.8% of students: Underweight.

32.8% of the students: Normal Weight

31.3 % of the students: Overweight.

28.1 % of the students: Obesity.

The duration of Physical Activity in a weekly basis:

1. No Physical Activity/week: 31% (26 students)

2. <30 Minutes/week : 29.8% (25 Students)

3. 30-60 Minutes/week: 17.9% (15 Students)

4. >60 Minutes/week : 21.4% (18 Students)

The Duration spent in watching TV and using the PCs:

1. <1 Hour: 9.5%

2. 1-2 Hours: 25%

3. 3-4 Hours: 31 %

4. >4 Hours: 34.5 %

The result what the students consume in the following amounts:

40.5% consume 2 tea-spoon sugar daily.

61.4% consume 1 Bar of chocolates daily.

50% consume 1 Can of Soft Drinks daily.

72.6% do NOT consume Power Drinks.

62% consume 1 bottle of juice daily

50% consume fruits sometimes.

The different health condition among the students and their first degree relatives:

86.7% have No diseases.

47.5% said that there are DM in their first degree relatives.

Finally, the dental hygiene:-

58.3% of the students have visited the Dentist last year.

51% have No tooth Decay.

5. DISCUSSION

From Table 2, we can find that (70 students) 83.3% of the students have their income <3000 SR. and this is the expected since our sample is College Students. However, there are few students (14 students) 16.7% which suggests of an alternative income.

From Table 3, this describes the amount spent on food by students. We find that we have close relation between the choices of A) <500 SR and B) 500-1000SR 42.9% and 40.5% respectively.

Comparing from Table 2 and Table 3 we found that most of student even with low income they spent almost 40% of their money on food.

From Table 1, We have decided to measure the BMI of each student by calculating the Height + Weight measures provided by the students. Unfortunately, about 23.8% (20 students) didn't fill in their data so we ended up having missing data which narrowed our sample to 64 students instead of 84. **The table shows that:**

7.8% (5 students) are in the category: Underweight.

32.8% (21 Students) of the students are in the category: Normal Weight

31.3 % (20 Students) of the students are in the category: Overweight.

28.1 % (18 Students) of the students are in the category: Obesity.

The chart shows the normal distribution of BMI:

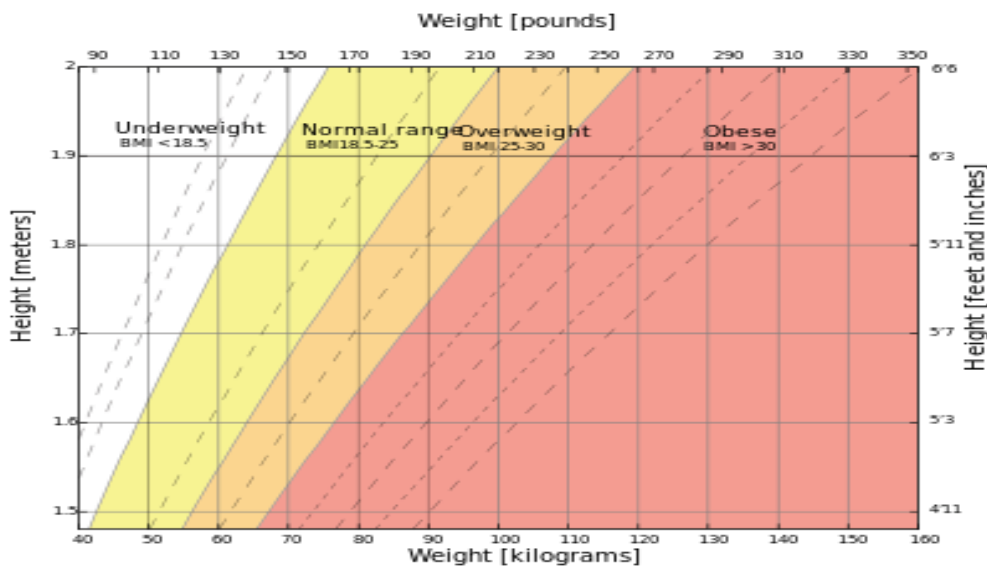


Table 10 shows the level of Physical Activity of the students in a weekly basis:

5. No Physical Activity/week: 31% (26 students)

6. <30 Minutes/week : 29.8% (25 Students)
7. 30-60 Minutes/week: 17.9% (15 Students)
8. >60 Minutes/week : 21.4% (18 Students)

And Table 11 shows the Duration that students spend watching TV and using the PCs:

1. <1 Hour: 9.5% (8 students)
2. 1-2 Hours: 25% (21 students)
3. 3-4 Hours: 31 % (26 students)
4. >4 Hours: 34.5 % (29 students)

When comparing between Table 1 + 10 + 11 we can correlate the relation between The number of students who are above the normal BMI is 59.4% (38 students) and this is suggesting with the decreased Physical Activity (31% (26 Students)) and the increased hours of watching TV and using PCs(34.5% (29students)) that they are highly related.

From tables 4 + 5 + 6 + 7 + 8 + 9 we find that the students consume the following amounts:

- 40.5% (34 students) consume 2 tea-spoon sugar daily.
- 61.4% (51 students) consume 1 Bar of chocolates daily.
- 50% (42 students) consume 1 Can of Soft Drinks daily.
- 72.6% (61 students) do NOT consume Power Drinks.
- 62% (52 students) consume 1 bottle of juice daily
- 50% (42 students) consume fruits sometimes.

From table 12+13:-

- 86.7% (72 students) have No diseases.
- 47.5% (29 students) said that there are DM in their first degree relatives.

From Table 14+15 we find that:

- 58.3% (49 students) of the students have visited the Dentist last year.
- 51% (43 students) have No tooth Decay.

6. CONCLUSION

- 1- Most of the students spend their money on food although they have low income, and that can be related to increased BMI in most of the student.
- 2- The number of students who are above the normal BMI is 59.4% (38 students) and this is suggesting with the decreased Physical Activity and the increased hours of watching TV and using PCs that they are highly related.
- 3- Chocolate and soft drinks are increased among the students and this suggests the relation between increased BMI.
- 4- The students juice intake is slightly higher than the soft drinks intake daily which is a good habit that needs to be emphasized on to substitute drinking soft drinks.
- 5- 50% of students consume fruits sometimes, and this is not what is recommended. So, we need to emphasize on consuming more fruits for better healthy choices and snacks.
- 6- There is high consumption of chocolates, soft drinks among the students which need to be addressed for alternative healthy choices to prevent any excessive sugar intake.
- 7- We can't find the relation between Power drinks and BMI since the student didn't consume much of power drinks.

8- Most of the students don't suffer from disease. However, they are still susceptible for chronic illnesses in the future if they don't pay attention toward their eating habits since 47.5% of their first degree relatives suffer from DM and other diseases.

9- There is very poor concern from the students about their dental hygiene which could be due to lack of awareness and may be less common low income that results in tooth decay.

7. RECOMMENDATION

There are no enough information about the sugar intake in Saudi Arabia and we do recommend the responsible authorities to adopt this topic since it has a very influencing future on our country and on our students, and by increasing the awareness of the public toward this topic we might be able to minimize the expenses that may be preventable.

There is an outstanding rising in the obesity level in Saudi Arabia. This paper showed that there are 59.4% of our students above the normal level of BMI and if the lifestyle continues to be the same, we are risking a huge increase in this unless precautionous measures are taken.

We do encourage the college to include a physical activity classes in the curriculum to increase the Physical activity of the students.

There is increased intake of chocolate and soft drinks in the college students. We recommend to change the vending machines in the college with other healthy choices. As we also recommend to include Fruits in the menu of the new cafeteria that is yet to be established.

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APPENDICES

APPENDIX: A

Graphs and Charts:

TABLE: 1

BMI		Frequency	Percent	Valid Percent	Cumulative Percent
	Underweight = <18.5	5	6.0	7.8	7.8
	Normal weight = 18.5–24.9	21	25.0	32.8	40.6
Valid	Overweight = 25–29.9	20	23.8	31.3	71.9
	Obesity = BMI of 30 or greater	18	21.4	28.1	100.0
	Total	64	76.2	100.0	
Missing	System	20	23.8		
Total		84	100.0		

TABLE: 2

Amount of Monthly Income

	Frequency	Percent	Valid Percent	Cumulative Percent
<3000	70	83.3	83.3	83.3
3000-7000	6	7.1	7.1	90.5
Valid 7000-10000	3	3.6	3.6	94.0
>10000	5	6.0	6.0	100.0
Total	84	100.0	100.0	

TABLE: 3

Amount spent on Food monthly

	Frequency	Percent	Valid Percent	Cumulative Percent
<500	36	42.9	42.9	42.9
500-1000	34	40.5	40.5	83.3
Valid 1000-2000	9	10.7	10.7	94.0
>2000	5	6.0	6.0	100.0
Total	84	100.0	100.0	

TABLE: 4

Amount of Tea-spoon sugar intake with Coffee or Tea or ...

	Frequency	Percent	Valid Percent	Cumulative Percent
Non	11	13.1	13.1	13.1
1 Tea spoon	16	19.0	19.0	32.1
Valid 2 Tea spoon	34	40.5	40.5	72.6
3 or More Tea spoon	23	27.4	27.4	100.0
Total	84	100.0	100.0	

TABLE: 5

Amount of chocolate bars consumed daily

	Frequency	Percent	Valid Percent	Cumulative Percent
Non	25	29.8	30.1	30.1
1 Bar	51	60.7	61.4	91.6
Valid 2 Bars	4	4.8	4.8	96.4
3 or More Bars	3	3.6	3.6	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

TABLE: 6

Amount of soft drinks cans consumed daily

	Frequency	Percent	Valid Percent	Cumulative Percent
Non	15	17.9	17.9	17.9
Valid 1 Can	42	50.0	50.0	67.9
Valid 2 Cans	21	25.0	25.0	92.9
Valid 3 or More Cans	6	7.1	7.1	100.0
Total	84	100.0	100.0	

TABLE: 7

Amount of Power drinks consumed daily

	Frequency	Percent	Valid Percent	Cumulative Percent
Non	61	72.6	72.6	72.6
Valid 1 Can	17	20.2	20.2	92.9
Valid 2 Cans	6	7.1	7.1	100.0
Total	84	100.0	100.0	

TABLE: 8

Amount of Bottle of juices consumed daily

	Frequency	Percent	Valid Percent	Cumulative Percent
Non	17	20.2	20.5	20.5
Valid 1 Bottle	52	61.9	62.7	83.1
Valid 2 Bottles	12	14.3	14.5	97.6
Valid 3 or More Bottles	2	2.4	2.4	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

TABLE: 9

Do you eat fruits daily?

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	11	13.1	13.1	13.1
No	24	28.6	28.6	41.7
Valid Sometimes	42	50.0	50.0	91.7
Valid Usually	7	8.3	8.3	100.0
Total	84	100.0	100.0	

TABLE: 10

Physical Activity performed in week

	Frequency	Percent	Valid Percent	Cumulative Percent
Non	26	31.0	31.0	31.0
<30 Minutes/Day	25	29.8	29.8	60.7
Valid 30-60 Minutes/Day	15	17.9	17.9	78.6
>60 Minutes/Day	18	21.4	21.4	100.0
Total	84	100.0	100.0	

TABLE: 11

Duration of watching TV or using PCs

	Frequency	Percent	Valid Percent	Cumulative Percent
<1 Hour	8	9.5	9.5	9.5
1-2 Hours	21	25.0	25.0	34.5
Valid 3-4 Hours	26	31.0	31.0	65.5
>4 Hours	29	34.5	34.5	100.0
Total	84	100.0	100.0	

TABLE: 12

Diseases students suffer from

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Non	72	85.7	86.7	86.7
DM	1	1.2	1.2	88.0
HTN	5	6.0	6.0	94.0
Heart Disease	3	3.6	3.6	97.6
Cholestrol	2	2.4	2.4	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

TABLE: 13

Diseases present in the family

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Non	19	22.6	31.1	31.1
DM	29	34.5	47.5	78.7
HTN	6	7.1	9.8	88.5
Heart Disease	2	2.4	3.3	91.8
Cholestrol	5	6.0	8.2	100.0
Total	61	72.6	100.0	
Missing System	23	27.4		
Total	84	100.0		

TABLE: 14

Visits to Dental Clinic in the past year

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	35	41.7	41.7	41.7
No	49	58.3	58.3	100.0
Total	84	100.0	100.0	

TABLE: 15

Tooth Decay presence

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	40	47.6	48.2	48.2
No	43	51.2	51.8	100.0
Total	83	98.8	100.0	
Missing System	1	1.2		
Total	84	100.0		

APPENDIX: B

Questionnaire (appendix1):

Name (Optional) / old /

The Academic Level

Social status.....

GPA / (2-3) (3-4) (4-5) Height / weight /

BMI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Underweight = <18.5	5	6.0	7.8	7.8
	Normal weight = 18.5–24.9	21	25.0	32.8	40.6
	Overweight = 25–29.9	20	23.8	31.3	71.9
	Obesity = BMI of 30 or greater	18	21.4	28.1	100.0
	Total	64	76.2	100.0	
Missing	System	20	23.8		
Total		84	100.0		

Q 1 / How much is the amount of your monthly income?

- Less than 3000 SR
- 3000-7000 SR
- 7000-10000 SR
- more than 10,000 SR

Q 2 / How much is the amount of your spending on food per month?

- Less than 500 SR
- 500-1000 SR
- 1000-2000 SR
- More than 2,000 SR

Statistics

		Amount of Monthly Income	Amount spent on Food monthly
N	Valid	84	84
	Missing	0	0
Mean		1.32	1.80
Std. Deviation		.809	.861

Q 3 / How many sugar spoon you are taking with Stimulant drinks (tea, coffee or other) daily ?

- Non
- one tablespoon
- Two tablespoons
- 3 tablespoons and more

Q 4 / How much chocolate do you eat daily?

- Does not eat at all
- One bar of Chocolate
- two bars of Chocolate
- Three Chocolate bars and more

Q 5 / How many soft drinks cans (Pepsi, Seven Up,) you are drinking daily?

- does not drink at all

- One can of soft drink
- two cans of soft drink
- 3 cans of soft drink and more

Q6 / how many power drinks cans you are taking daily?

- does not drink at all
- One can of power drink
- two cans of power drinks
- 3 cans of power drinks and more

Q 7 / how many bottle of juices you are drinking daily ?

- does not drink at all
- One bottle of juice
- two bottles of juices
- 3 bottles of juices and more

Q 8 / Do you eat fruits on a daily basis? What kind?

- Yes
- No
- Sometimes
- often

Statistics

	Amount of Tea-spoon sugar intake with Coffee or Tea or ...	Amount of chocolate bars consumed daily	Amount of soft drinks cans consumed daily	Amount of Power drinks consumed daily	Amount of Bottle of juices consumed daily	Do you eat fruits daily?
N Valid	84	83	84	84	83	84
Missing	0	1	0	0	1	0
Mean	2.82	1.82	2.21	1.35	1.99	2.54
Std. Deviation	.984	.683	.822	.611	.672	.828

Q 9 / How many minutes your performed a physical activity in a week ? What kind?

- for 60 minutes a day or more in the last week
- for 30-59 minutes a day in the last week
- for less than 30 minutes a day in the last week
- does not perform any exercise at all

Q10 / How many hours you spend on watching the TV or using of the PCs daily?

- Less than one hour
- 1-2 hours
- 3-4 hours
- more than 4 hours

Statistics

	Physical Activity performed in week	Duration of watching TV or using PCs
N Valid	84	84
Missing	0	0
Mean	2.30	2.90
Std. Deviation	1.128	.989

Q11 / Do you suffer from one of the following diseases?

- **Diabetes**
- **High blood pressure**
- **heart disease**
- **High Cholesterol**

12 Q / does anyone of your family member suffer from of any of the following diseases? what kind of relationship they relate it to you ?

- **Diabetes**
- **blood pressure**
- **heart disease**
- **High Cholesterol**

Statistics

		Diseases students suffer from	Diseases present in the family
N	Valid	83	61
	Missing	1	23
Mean		1.34	2.10
Std. Deviation		.928	1.136

Q 13 / Have you visited the dentist in the last year? How many times have you visited the dentist?

Yes No

14 Q / Do you have tooth decay? how many?

Yes No

Statistics

		Visits to Dental Clinic in the past year	Tooth Decay presence
N	Valid	84	83
	Missing	0	1
Mean		1.58	1.52
Std. Deviation		.496	.503