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Obesity among the Medical Students in Al-Maarefa Colleges in Riyadh-Saudi Arabia

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Abstract: **Obesity is abnormal or execs body fat has accumulated to the extent that it may have negative effect on health. Being overweight or obese contributes to numerous health conditions that limit the quality and length of life.**

Determine the level of overweight and obesity; describe factors related to obesity in student's behavior and to find out the awareness about obesity.

Method: A cross-sectional was conducted on Obesity. A questionnaires was designed to collect data from the sample size was 110 medical students in Al-maarefa college during the period from 20/3/2014 to 24/5/2014.

Result: Of the obese students, 35% sleep 7-8 hours. This variation in proportion of students for sleep 7-8 hours over the body weight categories was statistically significant (P= 0.0304). It was found that 76% of the medical students of Al-maarefa College are strongly agreed that eating fruits would make them healthier. Those who strongly agree on these parameters, with significant difference of (P=0, 0252). Among the 110 medical students in Al-mararefa College about 18.18% are over strongly agree that watching television would make them eat more this was statistically significant. Percentage was 31.81% and who were disagree was 68.18%and statistically no significant (p=0.0024).

Conclusion: watching television, sleep less and not eating fruit were the major risk factors of obesity.

Keywords: **Obesity, overweight, BMI, health, obese.**

1. INTRODUCTION

Obesity is defined as abnormal or excess body fat has accumulated to the extent that it may have a negative effect on health, leading to reduced life expectancy and/or increased health problems.[1]Being overweight or obese contributes to numerous health conditions that limit the quality and length of life, including, high triglycerides and low high-density lipoprotein (HDL) cholesterol, Type 2 diabetes, high blood pressure, metabolic syndrome, a combination of high blood sugar, high blood pressure, high triglycerides and low HDL cholesterol, heart disease and stroke.

Objectives:

1- To determine the level of overweight and obesity in Al-maarefa college and compeer between different colleges.
2- To describe factors related to obesity in students behavior.
3- To find out the awareness about obesity.

2. REVIEW OF LITERATURE

A research was conducted 2003 in Spain. The research aim are to look for the relation between the obesity and socioeconomic position. It was found that in men and women, no relation was existed between the two measures of obesity studied and socioeconomic circumstances. [2]Another research conducted in Sweden in 2010 aimed of knowing the associations between severity of obesity in childhood and adolescence, obesity onset and parental BMI. They found a positive correlation for severity of obesity at age 7 with maternal (P=0.05). Severity of obesity at this age also showed a strong negative correlation with the age at onset of obesity. Severity of obesity at age 15 was significantly correlated with

both maternal and paternal BMI (P<0.01). They conclude that, the impact of parental BMI on the severity of obesity in children was strengthened as the child grows into adolescence.[3]The research was done among some states in America in 2003 and. The aim of the research is prevention of pediatric overweight, the prevalence of overweight and its' significant co-morbidities in pediatric populations has rapidly increased and reached epidemic proportions so we need an optimal approaches to prevention need to combine dietary and physical activity.[4]The research was done in the United States 2008 and the aim of the research is to know the association between obesity during pregnancy and increased use of health care, we found that a maternal BMI higher than normal is associated with greater use of health care services, especially for pregnancies associated with a BMI of 35.0 or greater.[5] A study in the American Medical Association in 2007. The study was about The "Changing Relationship of Obesity and Disability". They found that among obese individuals, the prevalence of functional impairment increased 5.4%, and activities of daily living impairment did not change. It is was concluded that obese participants surveyed during 1999-2004 were more likely to report functional impairments than obese participants surveyed during 1988-1994, and reductions in activities of daily living impairment observed for non-obese older individuals did not occur in those who were obese.[6]A study in the United States in 2002 the study was about the "Prevalence and Trends in Obesity among US Adults" it was found that age-adjusted prevalence of obesity was 30.5% in 1999-2000 compared to 22.9% in NHANES III (1988-1994). It was concluded that increases in the prevalence of obesity and overweight previously observed continued in 1999-2000.[7]The research published in the United Kingdom, 2014.The aim was to explore the perspectives of young people in the UK on obesity. The research is 'It's on your conscience all the time on obesity among young people aged 12-18 years in the UK". The result is young people considerable emphasis on personal responsibility. For the conclusion is need to engage young people actively to address the social implications of obesity.[8]The research published in Iran, 2010. The aim is to assess the relationship of overweight and obesity with some psychological disorders in Iranian adolescents. The title is "association of overweight and obesity with Mental Distress in Iranian Adolescents". The result is 58.7% of students had anxiety, without significant association of overweight .The conclusion is excess weight did not increase the risk of psychological distress.[9]A research was conducted 2011 in USA. The research aim is to measure frailty included the scores on physical performance test (PPT) the finding suggest that a combination of weight loss and exercise provides greater improvement in physical function than either intervention alone.[10] A research was conducted 2012in USA. The research aim is to measure relative risk of the development of obesity it found that the genetic association with adiposity appeared to be more with greater intake of sugar-sweetened beverages.[11]The research published in Turkey, 2014. The aim was to determine the frequency and predictors of obesity hypoventilation syndrome in hospitalized patients. The research is" Frequency and predictors of obesity hypoventilation in hospitalized patients at a tertiary health care institution". The results are hypoventilation was associated with acute diseases in 64.2% and chronic diseases in 35.8% of the patients. For the conclusion is obesity hypoventilation syndrome is a common cause of chronic alveolar hypoventilation.[12] In Victoria, Australia 2 random sampling from primary schools, one was commenced in 1997, and the other was in 2000. The main aim in this research was to determine relationships between weight and health-related reported by parents-proxy and child self-report in a population sample of elementary school children. The effect of child overweight and obesity on health-related in that community-based sample were significant but smaller than in a clinical sample using the same measure.[13] The study published in USA, 2014 .The objective is to assess the efficacy of behavioral interventions for managing gestational weight gain. The title is "Interventions to reduce and prevent obesity in pre-conceptual and pregnant women". The result is a lower gestational weight gain in the intervention groups verses care groups. The conclusions is behavioral interventions in pregnancy is reducing gestational weight gain in obese women, but not overweight or morbidly obese women.[14] At the University of Pittsburgh from February 2007 through April 2010 single-blind randomized trial conducted. The main reason of this research was to determine the efficacy of weight loss and physical activity intervention on the adverse health risks of severe obesity. Clinically significant weight loss and favorable changes in cardio-metabolic risk factors resulted from both lifestyle intervention and physical activity.[15]The research was done in 2002 in King Saud University, Riyadh, Saudi Arabia. The Aim of research is to estimate prevalence of overweight and obesity in Saudi children with ages ranging up to 18 years. This epidemiological household survey shows the overweight and obesity trends in Saudi children based on the international sex-specific cut-off points for BMI. It also shows a variable prevalence in different age groups until after 13 years, when the prevalence rate increases.[16]The research done in 2002, king Saud University, Saudi Arabia. The Aim of research is to estimate Prevalence and risk factors of obesity and overweight in adult Saudi population. It can be concluded from this recent national survey that obesity and overweight are enormous public health problems in Saudi Arabia and are associated with elevated hypertension rates.[17]The research was done in United States of America in 2009.The aim of this research to assess association between maternal overweight, maternal obesity, and congenital anomaly. The results to pool ORs for overweight and obesity were calculated for 16 and 15 anomaly groups or subtypes. Finally, the maternal obesity is associated with an increased risk of a range of structural anomalies. Further studies are needed to confirm whether maternal overweight is also implicated.[18]European Journal of

Clinical Nutrition (1998). The aim of this research to analyses the association between nutritional and familial factors and obesity in boys and girls. The results were comparison with similar studies from other regions and recommended allowances, the intakes of total energy. Finally, the lack of correlation between factors indicating obesity and total energy intake suggests that the positive energy balance causing obesity is due mainly to a low energy output.

3. METHODS

Study design: cross-sectional

Study area: Al-maarefa collage, Riyadh, Saudi Arabia

Time of study: from 20/3/2014 to 24/5/2014

Tool: questionnaire

Sample: The study sample selected by convenience from deferent levels of college of medicine at Al-maarefa College and the sample size was 110.

Methods of data collection: The data were gathered by interview using a specially designed questionnaire, close-ended questions, the weight and height measured by a scale, and then calculates the B.M.I.

Analysis: After collecting the data excluding unclear and incomplete questionnaire, clearance, coding, and entry. After that will be analyzed using software, package SPSS.

4. RESULTS

The research was discussed and interviewed with Al-maarefa medical students about the reasons and habits that can help and affect their bodies to gain weight and lead to obesity. According to the collected data, it was found that 64.55% of Al-maarefa medical students were either overweight or obese. Regarding to the habit of eating while not hungry the data showed that 44.55% of all students were having this habit, among the obese the percentage was 61 %, compared to 39% among the other weight categories. The difference was not significant. (Table 1). Regarding the relationship between habit of watching TV and BMI, it was found that 10% who watches TV for one hour per day were obese. On another hand 18.2% who watches TV for more than one hour per day were obese while it was found that 19.1% who watches TV for one hour per day were overweight. . On another hand, 17.3% who watches TV for more than one hour per day were overweight. (Table 2). Regarding the relationship between soft drinks and BMI. It was found 3.6% who were obese without drinking soft drinks. On another hand 24.5% who were obese and drink one or more can per day. While it was found 6.4% who were overweight without drinking soft drinks. On another hand 30% who were overweight and drink one or more can per day. (Table 3) . Regarding to level of student (medical students in MCST) and they think about the soft drink would harm health, it was found that 91% of the students were strongly agree. It was found that students who were strongly agree in level 3 = 52%, level 4= 58%, level 5 = 60%, and =>level 6 = 61%, this variation did not reach statistical significance. (Table 4).Of the 110 medical students in Al-marrefa College about 37% sleep between 7-8 hours. Of the obese students 35% sleep 7-8 hours and so did 53% of the overweight and 22.5% of the normal and underweight category. This variation in proportion of students for sleep 7-8 hours over the body weight categories was statistically significant (P= 0.0304). (Table 5). Regarding the level of obesity it was found that of the 110 medical students in Al-maarefa College about 60% eat out because of their friends. Of the obese students 48% eat out because of their friends and so did 62.5% of the overweight and 66.7% of the normal and underweight category which is not significant. Also of the 110 medical students in Al-maarefa College about 22.7% eat out because there is not too much cooking at home. Of the obese students 26% eat out because there is not too much cooking at home and so did 25% of the overweight and 17.9% of the normal and underweight category which is not significant. There is No significant difference exist between the BMI category and their reasons for eating out. (Table 6). A total of 110 medical students in Al-marrefa college about 67.3% were strongly agree on do you think the availability of fast food has had an effect on obesity while 32.7% were Non-strongly agree. This variation in proportion of students for availability of fast food was gradient but not significant difference. (Table 7).Regarding to level of student (medical students in MCST) and they think about the soft drink would harm health.it was found 91% strongly agree.It was found that students who were strongly agree in level 3 = 52%, level 4= 58%, level 5 = 60%, and =>level 6 =61% this variation did not reach statistical significance. (Table 8). According to these findings, it was found that 76% of the medical students of Al-maarefa College are strongly agree that eating fruits would make them healthier. Those who strongly agree on these parameters, the levels were 57%, 68%, 80% and 91% in

levels 3, 4, 5 and 6-8 respectively. With significant difference of (P=0, 0252) associated between the student level and their opinion of this parameter. (Table 9) Among the 110 medical students in Al-mararefa College about 18.18% were strongly agree that watching television would make them eat more. Across the different levels it was absorbed that 38% were in level 3, 23% were in level 4 and 86% of level 5 and over students were strongly agree that watching television would make them eat more . The version between the different academic levels of the medical students was statistically significant, the percentage was 31.81% and who were disagree was 68.18% and with statistically no significant (p=0.0024). (Table 10). Regarding the exercise, it was found that 97% of the students from all the academic levels think that exercise would help in reducing weight and improving general health. 78% of them strongly agree, and 19% agree. On the other hand, only 3% who disagree regarding the effeteness of exercise. (Table 11).

Table 1: Relationship of habit of eating while not hungry with BMI among Al-maarefa medical students (AL Riyadh, May 2014)

BMI* / Eating / While not hungry	Underweight <18.5*	Normal 18.5-24.9	Overweight 25-29.9	Obese ≥30	Total
Yes	1	15	15	18	49
No	2	21	25	13	61
Total	3	36	40	31	110

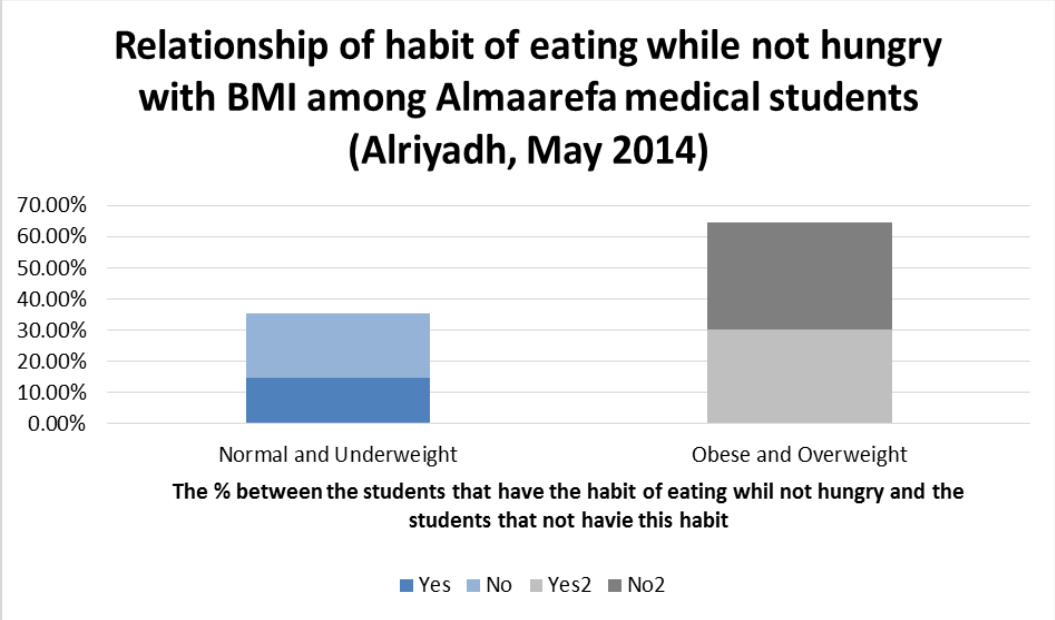


Table 2: Relationship between BMI and habit of watching TV among Al-maarefah medical students (Al Riyadh, May 2014)

BMI / *WATCHING TV PER HOUR*	UNDER WEIGHT	NORMAL	OVER WEIGHT	OBESE	total
1	1	15	21	11	48
2	1	13	10	9	33
≥3	1	8	9	11	29
Total	3	36	40	31	110

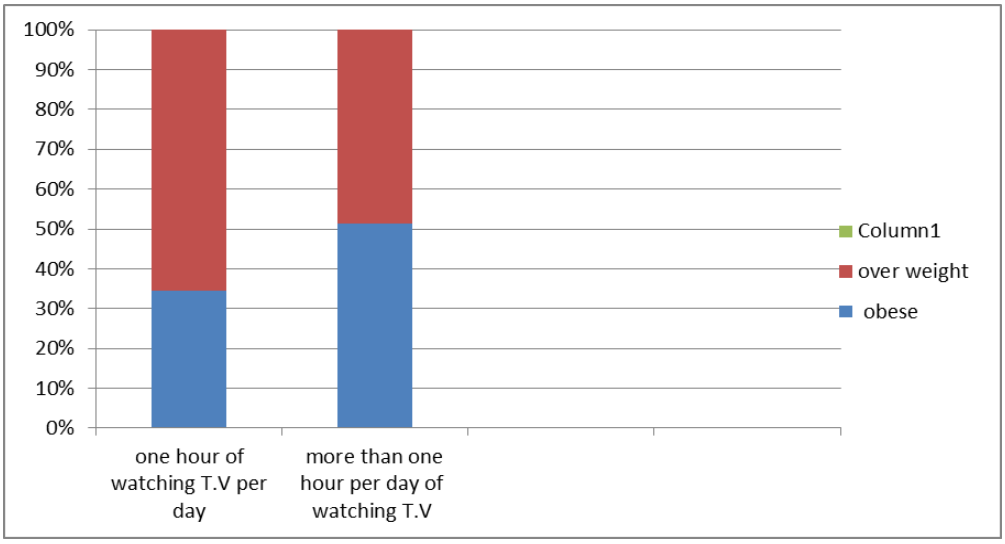


Table 3: Relationship of daily consumption of soft drinks with BMI among Al-maarefa's medical students, Riyadh may 2014.

BMI / Consumption	Under weight	normal	Over weight	obese	Total
0	2	8	7	4	21
One	1	15	16	16	48
Two	0	6	9	6	21
Three	0	6	4	2	12
Four	0	1	1	1	3
Five or more	0	0	3	2	5
Total	3	36	40	31	110

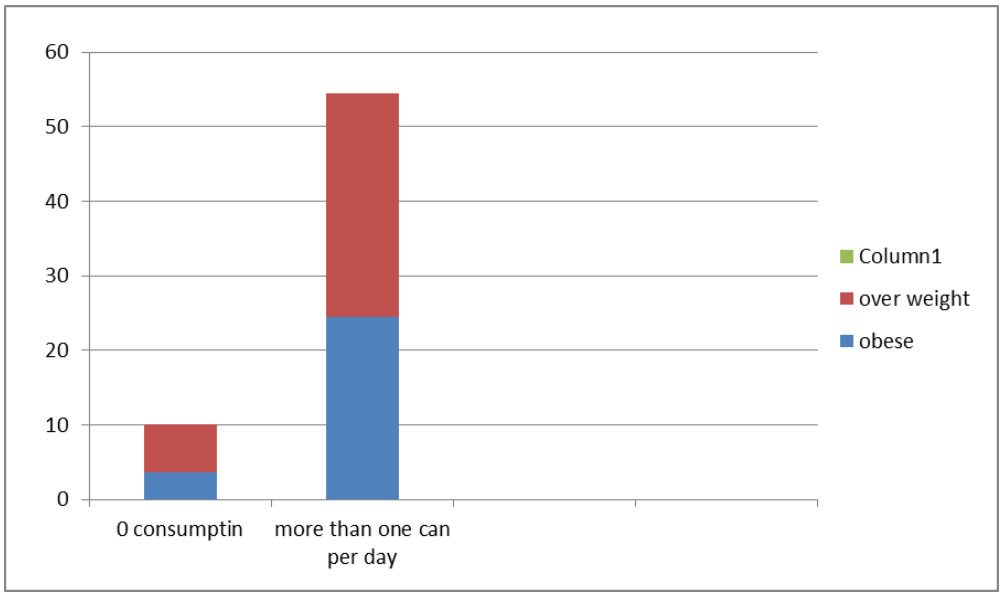


Table 4: Relationship between BMI of students and performing exercise

BMI / Exercise	Underweight <18.5	Normal 18.5-24.9	Overweight 25-29.9	Obese ≥30	Total
Yes	3	29	37	25	49
No	0	7	3	6	61
Total	3	36	40	31	110

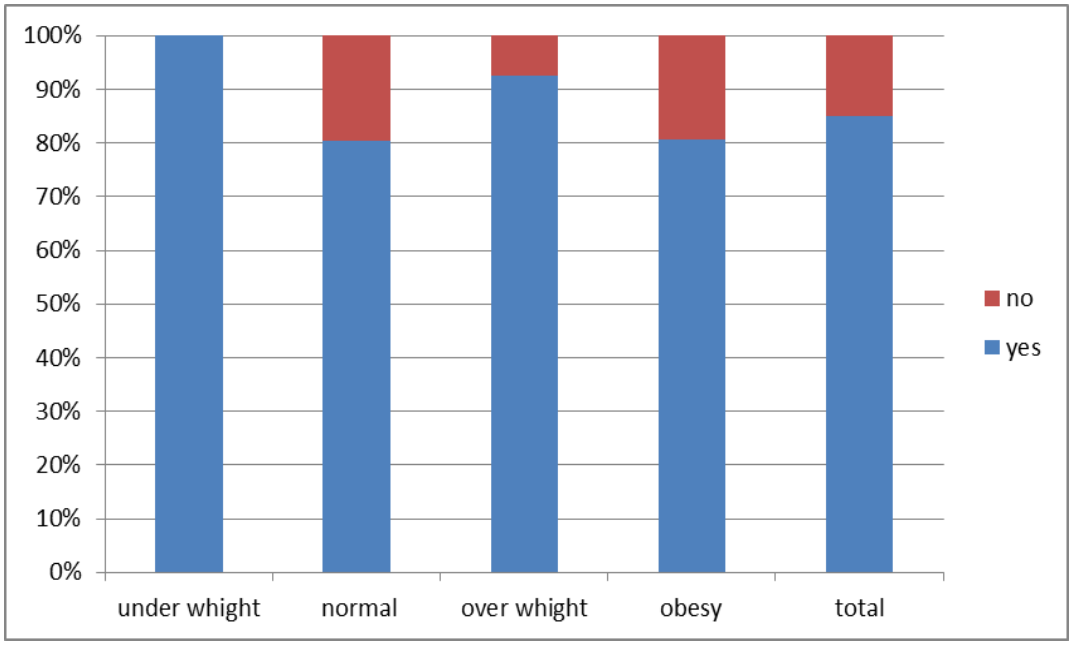
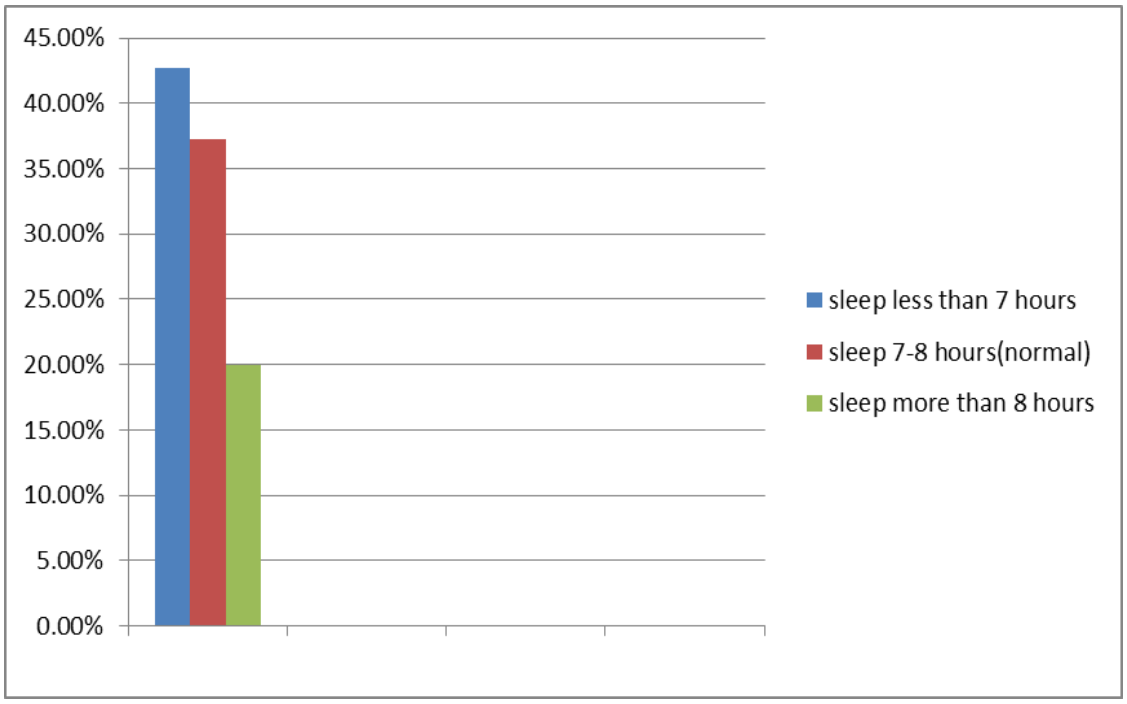


Table 5: Relationship of duration of sleeping per day with BMI among Almaarefa medical students (AL Riyadh, May 2014)

*BMI / Sleeping per day (hours)	Underweight <18.5*	Normal 18.5-24.9	Overweight 25-29.9	Obese ≥30	Total
7<	0	19	15	13	47
7	0	5	12	5	22
8	0	4	9	6	19
9	1	3	2	2	8
10>	2	6	1	5	14
Total	3	37	39	31	110

BMI= Body Mass Index*



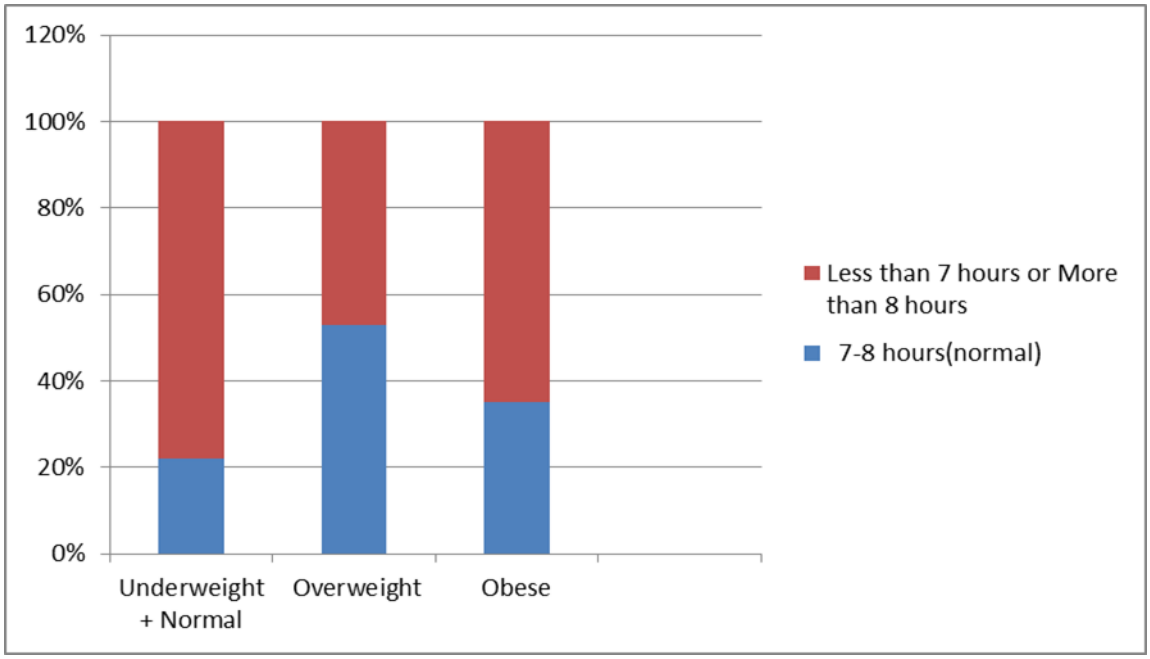


Table 6: Relation of the BMI of the students and the reasons of eating out among Al-maarefa medical students (Riyadh May 2014)

B.M.I / Reasons For eating out	Under weight	Normal weight	Over weight	Obese	Total
Friends	1	25	25	15	66
Not too much cooking at home	1	6	10	8	25
Other	1	5	5	8	19
Total	3	36	40	31	110

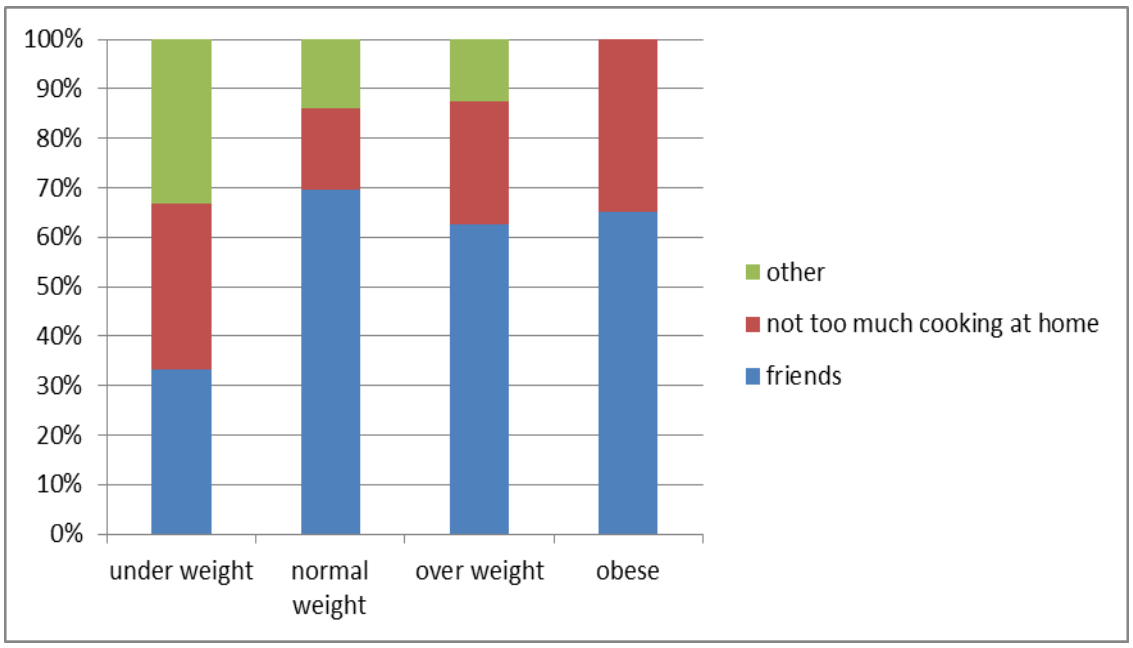
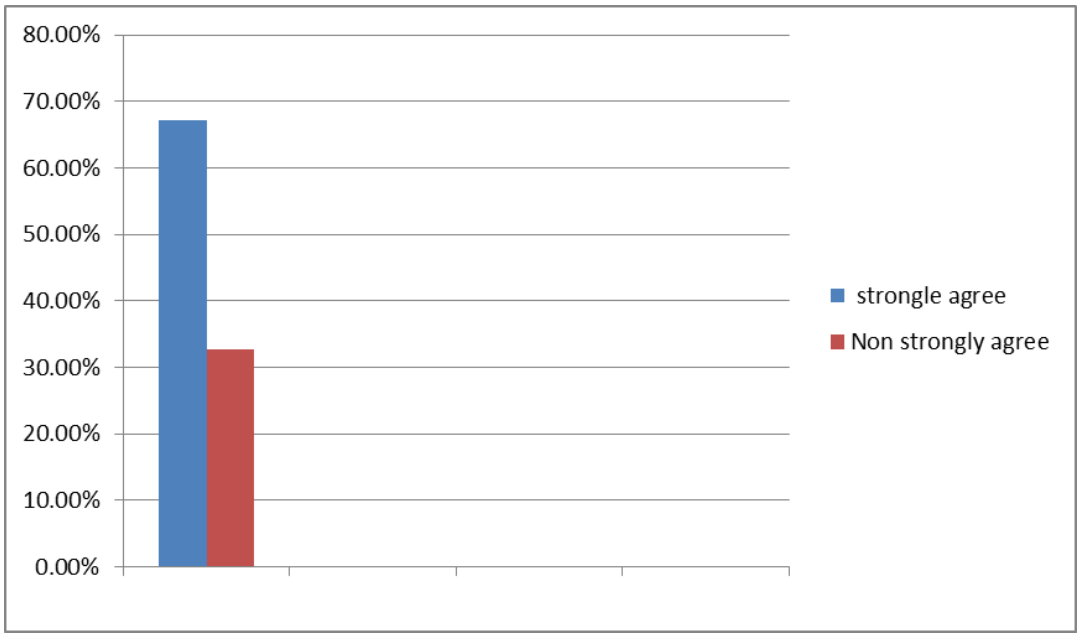


Table 7: Relationship of the levels of the availability of fast food among Al-maarefa medical students (AL Riyadh, May 2014

Levels / *AOFF	3	4	5	6	7	8	Total
Strongly agree	12	18	17	18	3	6	74
Agree	7	13	6	3	1	2	32
Disagree	2	1	1	0	0	0	4
Strongly disagree	0	0	0	0	0	0	0
Total	21	32	24	21	4	8	110

*AOFF:

Availability of Fast Food



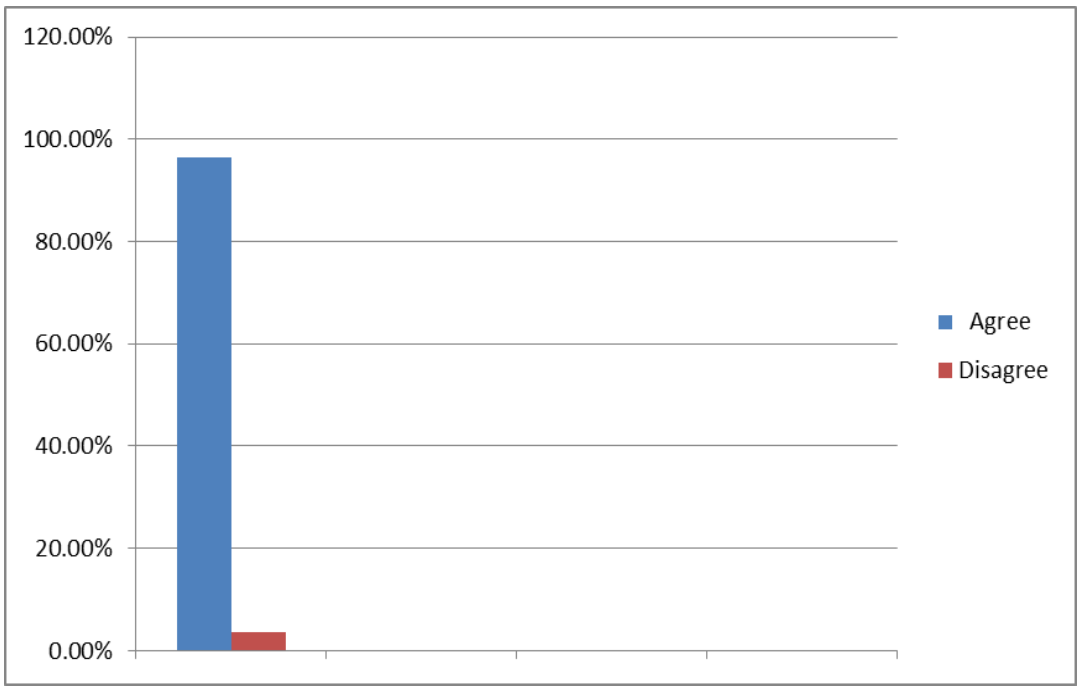


Table 8:

Level / Softdrinks	3	4	5	6	7	8	Total
Strongly agree	11	18	15	14	0	6	64
Agree	10	13	3	5	4	1	36
Disagree	0	0	7	1	0	1	9
Strongly disagree	0	0	0	1	0	0	1
Total	21	31	25	21	4	8	110

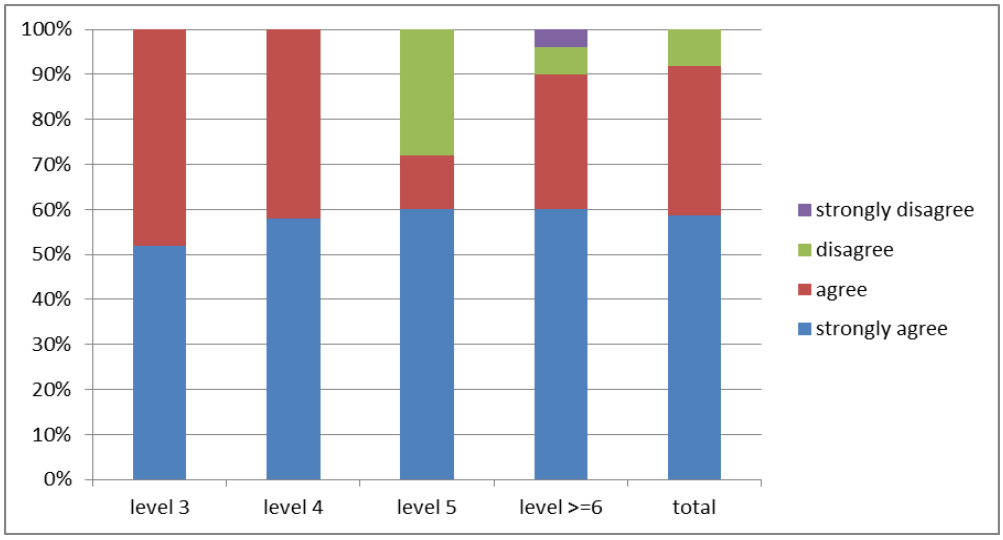
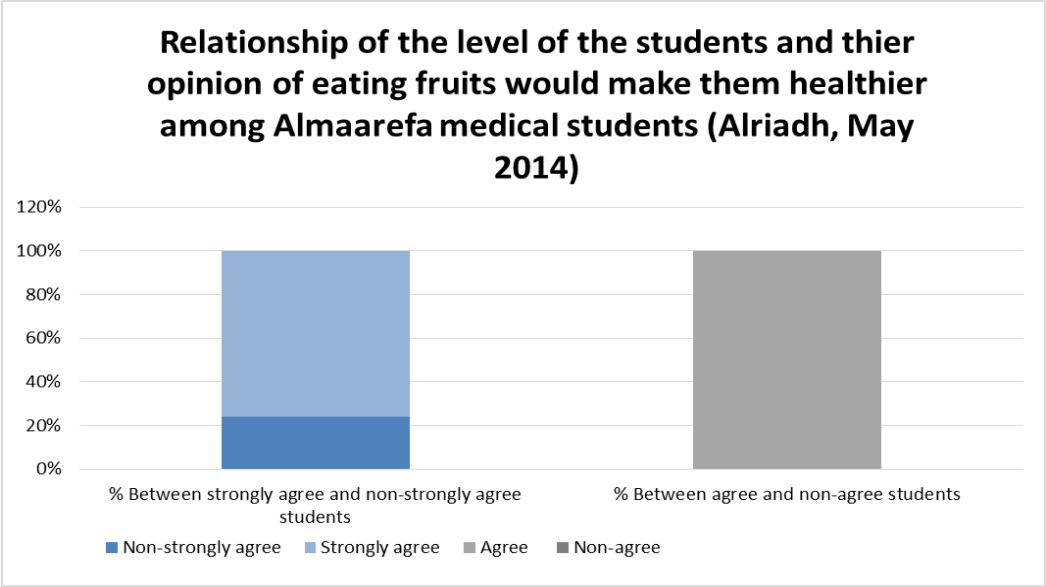


Table 9: Relationship of the level of the students and their opinion of eating fruits would make them healthier among Al-maarefa medical students (AL Riyadh, May 2014)

Level / Eating Fruits	3	4	5	6	7	8	Total
Strongly agree	12	21	20	18	4	8	83
Agree	9	10	5	3	0	0	27
Disagree	0	0	0	0	0	0	0
Strongly disagree	0	0	0	0	0	0	0
Total	21	31	25	21	4	8	110



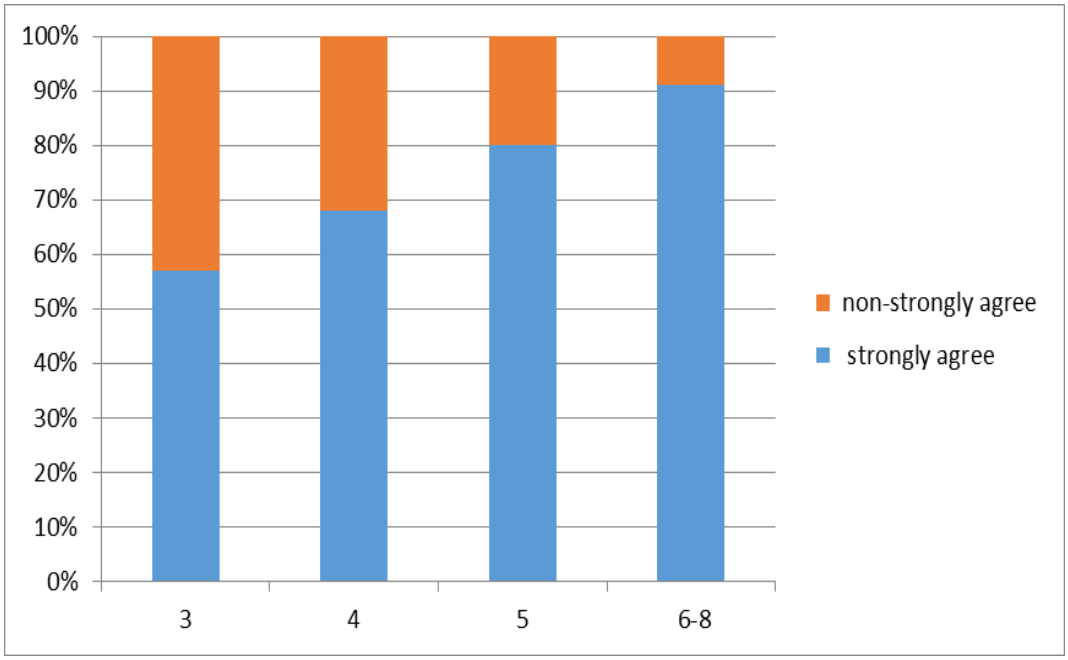


Table 10: Relationship of the level of the students and their opinion of watching television would make them eat more among Al-maarefa medical students in Riyadh, (May 2014)

Level / Watching television	3	4	5	6	7	8	Total
Strongly agree	8	7	2	3	0	0	20
Agree	8	13	13	12	3	6	55
Disagree	5	10	6	5	1	2	29
Strongly disagree		1	4	1	0	0	6
Total	21	31	25	21	4	8	110

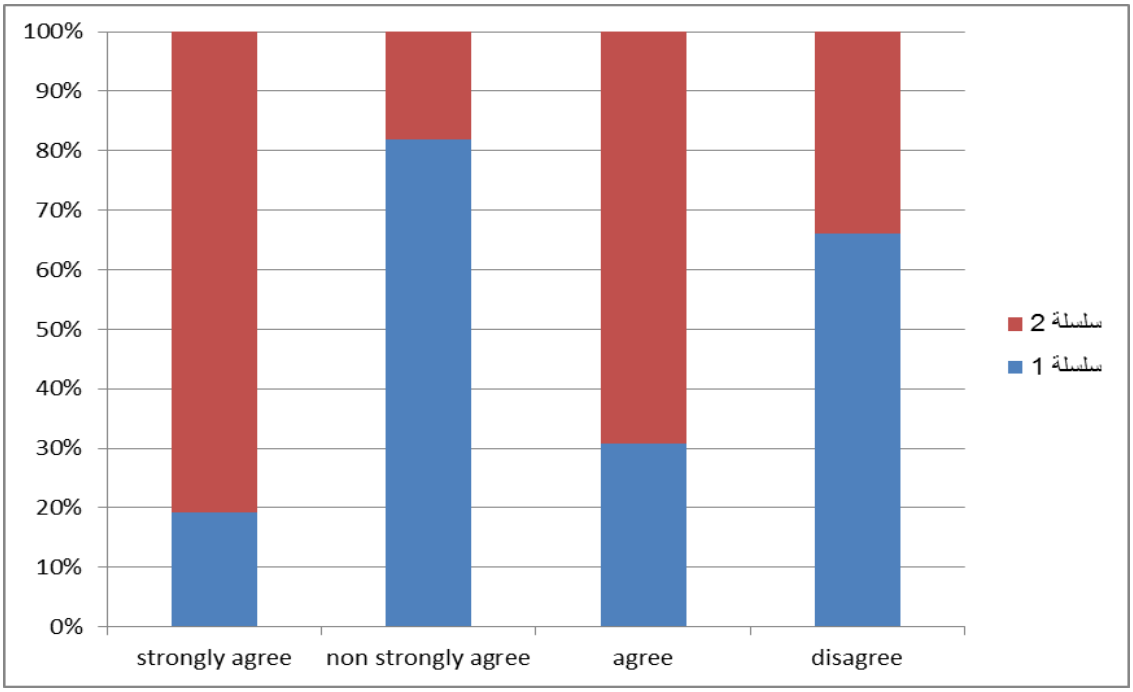
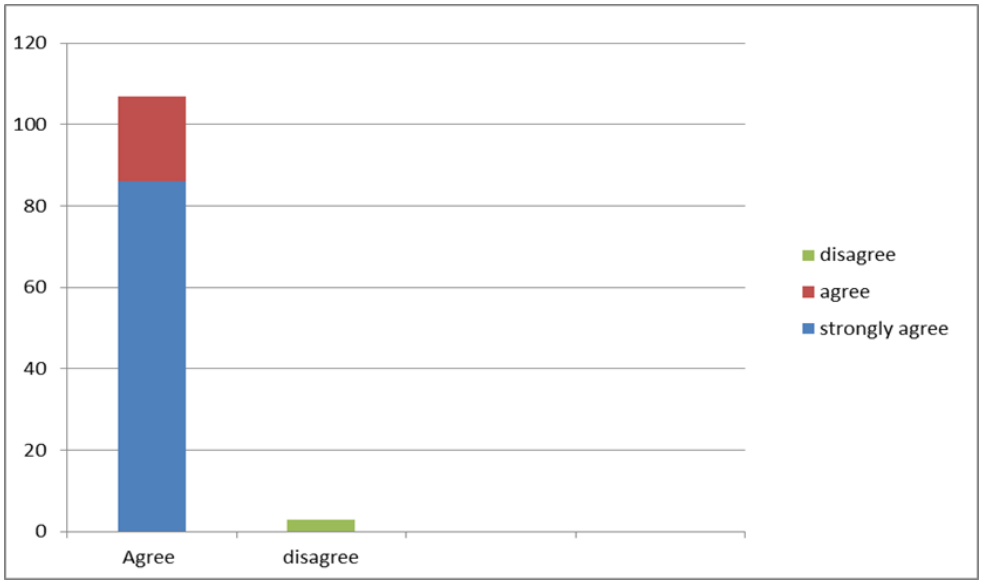


Table 11:

Level / Exercise	3	4	5	6	7	8	Total
Strongly Agree	10	25	18	16	3	8	86
Agree	5	6	4	5	1	0	21
Disagree	0	0	2	0	0	0	2
Strongly Disagree	0	0	1	0	0	0	1
Total	21	31	25	21	4	8	110

	Agree	Disagree	Total
Number of students	107	3	110
Percentage	97.2%	2.8%	100%



5. DISCUSSION

The portion of overweight and obese among the medical students in Al-marrefa College is very high. In this study, eating while not hungry was not statistically significant and not associated with obesity. Many theories of hunger are historically discussed from the biological component. Cannon and Washburn (as cited in Coon, 1995) came up with the stomach contraction theory which states that we know we are hungry when our stomach contracts. In the notorious balloon study, Washburn trained himself to swallow a balloon which was attached to a tube, and then the balloon was inflated inside of his stomach. When the balloon was inflated, he did not feel hungry. Later this theory was opposed by the fact that people whose stomach was removed still felt hungry.[19]In this study, No significant association existed between the BMI categories and performing exercise, exercise leads to weight loss (Positive Effects) promotes a healthy body composition, and decreases the risk of developing certain chronic health problems, such as type 2 diabetes and heart disease.[20]In this study, sleeping well was statistically significant and associated with obesity; Sleep is an important modulator of neuroendocrine function and glucose metabolism in children as well as in adults. In recent years, sleep curtailment has become a hallmark of modern society with both children and adults having shorter bedtimes than a few decades ago. This trend for shorter sleep duration has developed over the same time period as the dramatic increase in the prevalence of obesity. There is rapidly accumulating evidence from both laboratory and epidemiological studies to indicate that chronic partial sleep loss may increase the risk of obesity and weight gain. The present article reviews laboratory evidence indicating that sleep curtailment in young adults results in a constellation of metabolic and endocrine alterations, including decreased glucose tolerance, decreased insulin sensitivity, elevated sympathovagal balance, increased evening concentrations of cortisol, increased levels of ghrelin, decreased levels of leptin, and increased hunger

and appetite.[21]In this study, No significant association exist between the BMI category and the reason for eating out, the widespread availability of fast food restaurants are an important determinant of obesity rates. Policy makers in several cities have responded by restricting the availability or content of fast food, or by requiring posting of the caloric content of the meals. But the evidence linking fast food and obesity is not strong. Much of it is based on correlational studies in small data set.[22] In this study, the availability of fast food was gradient, but not significant difference associated with obesity; Are you obese?? There is a 33.8% chance that you are if you are a resident of the United States of America. The Centers for Disease and Control puts the figure at one-third or 33.8% as far as obesity in the nation is concerned**.** Around 350,000 people die due to obesity every year. What is more alarming is that the percentage of obese children between 6 and 11 years of age rose from 7% in 1980 to 20% in 2008. Obesity has assumed the proportions of an epidemic. And fast foods have added fuel to the fire.[23]In this study, soft drinks are not associated with obesity. New research powerfully strengthens the case against soda and other sugary drinks as culprits in the obesity epidemic. Collectively, the results strongly suggest that sugary drinks cause people to pack on the pounds, independent of other unhealthy behavior such as overeating and getting too little exercise, scientists' say.[24] In this study, eating fruits was statistically significant and associated with obesity; fruit has many health benefits – they contain numerous phytochemicals (pronounced "fight"-o-chemicals) that have a beneficial effect on health. Some phytochemicals have antioxidant effects – they help prevent damaging reactions within the body and have a beneficial effect upon health. Other phytochemicals help reduce inflammation. By reducing inflammation and oxidation, phytochemicals appear to promote heart health and reduce the risk of neuro-degenerative diseases like Alzheimer's and Parkinson's disease.[25]In this study watching television is not associated with obesity. The number of hours of television watched per day and body fat mass, with every extra hour/day spent watching television associated with a 2.2 pound increase in body fat.[26]

6. CONCLUSION

There were many risk factors that increase the level of obesity. Those are watching television while eating, sleeping, and does not eating fruit.

7. RECOMMENDATION

The level of obesity should be verified. If it's that height, certain measurements should be done.

- Prohibit watching television while eating
- Try to eat more fruit in all meals
- Balance sleep will help to maintain healthy weight

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