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ROLE OF KNOWN RISK FACTORS IN DEVELOPMENT OF OBESITY AMONG SAUDI POPULATION, RIYADH, 2018.

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ABSTRACT

Background: Obesity contributes significantly to morbidity and mortality rates worldwide, the Kingdom of Saudi Arabia (KSA) experienced rapid socio-cultural changes caused by the accelerating economy in the middle east, that was associated with major changes in food choices and eating habits which, progressively became more and more prominent in KSA, Such "a lifestyle" has been claimed for the rising rates of obesity which were recently observed among Saudi adult population. **Objective:** The study aimed to assess the different obesity-associated factors among Saudis adult population. **Methodology:** Observational cross-sectional study, 160 male (age >18) in Riyadh city, the height and weight were obtained firstly then calculated to yield BMI, self-administrated questionnaire was focused on "eating habits, physical activity, sedentary lifestyle, and genetic factor", the Saudi adult male people were included however the Saudi females were excluded as well as the non-Saudi people, data analyzed using Statistical Package for Social Sciences (SPSS) software, version 21.0, P-value of less than 0.05 considered significant, consent obtained before data collection. **Result:** BMI >30.0% for respondents. The major associated risk factor was the genetic factor which represented about 100 % in weight group (162-182) kg, followed by some risk factors such as accessibility to fast food which revealed 55% in weight group (78-98) kg and eating habits particularly eating alone that represented about 100% in weight group (162-182) kg. There was a significant statistical relationship between the genetic factor and high BMI (P< 0.05). The accessibility to fast food also had a significant relationship with weight (P< 0.05). **Conclusion:** Genetic factor, accessibility to fast food and eating habits would participate mainly in elevating BMI. The public health organizations should provide health education programs to increase awareness about obesity and its associated risk factors.

KEYWORDS: Obesity - Saudi Arabia - Adults - Fast food - Eating habits - Sedentary lifestyle - Genetic factor.

INTRODUCTION

Obesity is a global risk factor for illness and death, it's increasing in the developing countries dramatically.[1,2] Previous studies in KSA indicate an increasing trend in the prevalence of obesity.[1] Data from the late 1980s throughmid-1990s show a prevalence of obesity averaging about 20%, ranging from as low as 13.1% among men to as high as 26.6% among women.[1] However, all prevalence estimates from 1995 and beyond are above 35%.[3,4] The last national survey on obesity in the Kingdom of Saudi Arabia and its associated risk factors was conducted in 2005 in collaboration with the World Health Organization.[1] Obesity is considered as a major public health problem in many countries including the kingdom of Saudi Arabia.[2] Both Obesity and overweight are worldwide abnormal conditions which are the fifth leading causes of global death.[5] The Global Burden of Disease 2010 study found that the high body mass index is the major leading cause of disease in Saudi Arabia.[1] Obesity is known as a non-communicable disease characterized by abnormal accumulation of excessive fat in the body.[2] The occurrence of Obesity is associated with many risk factors such as sedentary lifestyle, physical inactivity, increase carbohydrates intake, alcohol intake, genetic factors and hormonal dysfunction.[1,2,5,6,7,8,9] Also, it can lead to many diseases including type 2 diabetes mellitus, cardiovascular diseases, hypertension, cancers, osteoarthritis, hyperlipidemia.[1,2,6,8,9] Our study aims to assess different known risk factors of obesity and its complications among Saudi population.

METHODOLOGY

Study design: Observational descriptive Cross-Sectional study.

Study area: Riyadh, Saudi Arabia adult general population. Riyadh is the capital city sf kingdom of Saudi Arabia.

Study population: Obese adult population.

Inclusion: Saudi population adult male.

Exclusion: other than Saudis and whose age under 18 years old.

Time of study: November 2017
Sample size: 160
Sample technique: Convenience sampling technique.

Instrument: Questionnaire; Self-administered questionnaire with close-ended questions was subjected to a probe firstly to test validity and reliability, that covers different factors that might contribute to the development of obesity.

Methods of collection: The data was gathered by an interviewer using a specially designed questionnaire with close-end questions, BMI was measured using weight and height.

Analysis: Using SPSS, (version 21) using. CHI-square test with P value 0.05 for significance.

- Data presentation tables are attached to this document.

Ethical considerations
Consent obtained from participants before data collection, emphasizing on the right of participants to withdraw from the study at any point of time.

RESULT
All participants had BMI >30.0%. The major risk factor was the genetic factor which accrued 100% of weight group (162-182) kg, followed by some risk factors such as accessibility to fast food which was associated with 55% in weight group (78-98) kg and eating habits particularly eating alone that represented about 100% in weight group (162-182) kg. There was a significant statistical relationship between the genetic factor and high BMI (P< 0.05). The accessibility to fast food also had a significant relationship with weight (P< 0.05).

Table (1): Personal Data.

High	145-157	158-170	171-183	184-196		Total
No	8	61	78	13		160
%	5.0	38.1	48.8	8.1		100%
Weight	78-98	99-119	120-140	141-161	162-182	Total
No	40	56	48	14	2	160
%	25.0	35.0	30.0	8.8	1.3	100%
Education	High	Graduate	Postgraduate			Total
No	49	94	17			160
%	30.6	58.8	10.6			100%
Age	18-30	31-40	41-50	51-60	61-70	Total
No	79	52	17	7	5	160
%	49.4	32.5	10.6	4.4	3.1	100%
Occupation	Unemployed	Student	Employee	Business		Total
No	24	33	93	10		160
%	15.0	20.6	58.1	6.3		100%
Marital status	Single	Married	Widowed	Divorced		Total
No	68	86	2	4		160
%	42.5	53.8	1.3	2.5		100%

N=160.

In table (1): showed that the majority of obese people was in height group (171-183) cm which represented 48.8%, furthermore the majority of obese people according to weight was in weight group (99-119) kg which represented 35%, the highest risk was in graduate people who represented 58.8%, moreover the majority of our sample according to age was in age group (18-30) which represented 49.4%, the majority of obese people was the employees who represented 58.1%, married people who occupied 53.8% were more obese than singles.

Table (2): The relationship between age and weight.

		Weight					Total
		78-98	99-119	120-140	141-161	162-182	
Age	18-30	24 30.4%	25 31.6%	22 27.8%	7 8.9%	1 1.3%	79 100%
	31-40	9 17.3%	17 32.7%	20 38.5%	5 9.6%	1 1.9%	52 100%
	41-50	4 23.5%	9 52.9%	3 17.6%	1 5.9%	0 0%	17 100%
	51-60	2 28.6%	2 28.6%	2 28.6%	1 14.3%	0 0%	7 100%
	61-70	1 20%	3 60%	1 20%	0 0%	0 0%	5 100%
Total		40	56	48	14	2	160

P value = 0.915.

Our study revealed that there is no statical relationship between age and obesity as in the table (2). It indicated that weight gain and age are not related, and this goes in contrary with study in Saudi Arabia in 2004[10], which revealed that there is a statical relationship between age and obesity. This may be attributed to the fact that their study has targeted both genders who are over 30 years old whereas our study was restricted to male adult obese.

Table (3): The relationship between physical exercise and weight.

		Are you doing any physical exercises?		Total
		No	**Yes**	
weight	78-98	21 52.5%	19 47.5%	40 100%
	99-119	32 57.1%	24 42.9%	56 100%
	120-140	33 68.8%	15 31.3%	48 100%
	141-161	10 71.4%	4 28.6%	14 100%
	162-182	1 50%	1 50%	2 100%
Total		97	63	160

P value = 0.478.

Our study revealed that there is no statical relationship between obesity and physical exercise as in the table (3) this goes in contrary with study in Taif, Saudi Arabia[11] and also study in Perth, Australia[7], This may be attributed to the fact that exercise commencement initiation is not specified whether before or after obesity occurrence.

Table (4): The relationship between Economic Class & Obesity.

Obesity	High	Upper middle	Middle	Total
No	49	33	78	160
%	30.6	20.6	49.8	100%

Our study found that there is no statical relation between obesity and economic status which is in table (4), this goes in contrary with study in eastern province of Saudi Arabia[10] which can be explained by fast food as general has a direct effect on obesity and weight gain regardless the price of fast food as well as distribution of restaurants may play a significant role.

Table (5): The relationship between eating alone and weight.

		Do you eat alone?		Total
		No	**Yes**	
Weight	78-98	18 45%	22 55%	40 100%
	99-119	40 71.4%	16 28.6%	56 100%
	120-140	29 60.4%	19 40.6%	48 100%
	141-161	5 35.7%	9 64.2%	14 100%
	162-182	0 0%	2 100%	2 100%
Total		92	68	160

P value = 0.013.

Eating habits especially eating alone showed a significant statical relationship with obesity as in table (5), this goes in line with study in Perth, Australia in 2004.[7]

Table (6): The relationship between genetic factors and weight.

		At which age did you become obese?			Total
		5-15	16-20	20 or more	
weight	78-98	8 20%	22 55%	10 35%	40 100%
	99-119	7 12.5%	19 33.9%	30 53.6%	56 100%
	120-140	21 43.8%	15 31.3%	12 25%	48 100%
	141-161	6 42.9%	3 21.4%	5 35.7%	14 100%
	162-182	2 100%	0 0%	0 0%	2 100%
Total		44	59	57	160

P value = 0.000.

In this study, we found that the genetic factor plays a hallmark role in obesity as in table (6) that showed the majority of obese people were also obese in their early life and this study goes in line with study which has been done in Hail, Saudi Arabia in 2011.[12]

DISCUSSION
Our study revealed that there is no statical relationship between age and obesity. And this goes in contrary with study in Saudi Arabia in 2008[10], which revealed that there is a statical relationship between age and obesity. This may be attributed to the fact that their study has targeted both genders who are over 30 years old whereas our study was restricted to male adult obese.

Moreover, our study revealed that there is no statical relationship between obesity and physical exercise, this goes in contrary with study in Taif, Saudi Arabia[11] and also study in Perth, Australia[7], This may be attributed to the fact that exercise commencement is not specified whether before or after obesity occurrence.

However, eating habits especially eating alone showed a significant statical relationship with obesity, this goes in line with study in Perth, Australia in 2003.[7]

In addition, our study found that there is no statical relation between obesity and economic status which, this goes in contrary with study in eastern province of Saudi Arabia[10] which can be explained by the fact that fast food as general has a direct effect on obesity and weight gain regardless the price of fast food as well as distribution of restaurants may plays a significant role.

In this study, we found that the genetic factor plays a hallmark role in obesity. And this study goes in line with study which has been done in Saudi Arabia at 1996.[12]

CONCLUSION
In conclusion, the major associated factor with high BMI is the genetic factor. The survey also revealed that accessibility to fast food could elevate weight. However, it could not show significant association of physical activity and obesity. For further researchers, we advise exploring about how to detect and analyze the relationship between obesity and genetic factors. The public health organizations should also provide health education programs to increase awareness about obesity and its associated risk factors. Thus, high awareness about risk factors would participate in lowering the obesity prevalence.

Recommendation
-The further researchers should understand the role of regular exercise in management and prevention of obesity in the Saudi context.
-The non-governmental organizations should conduct heath education program targeting role of diet in obesity prevention.

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