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Reducing Obesity Problems in Saudi Arabia Northern Borders Using Data Mining and Computer Networks

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ABSTRACT: *This research aims at exploring obesity as a serious health problem that threatens many people all over the world. Obesity is associated with a number of serious health conditions such as diabetes, sleep apnea, cardiovascular diseases, and even cancer. Obesity is no longer a manifestation of luxury and riches, but has become a symbol of malnutrition .Therefore; the international community should take the necessary steps to bring solutions that help reduce the obesity development in future. To investigate obesity disease, the researcher has applied the text mining method, a text analysis process that is performed on a wide range of technology to extract the useful information related to obesity from natural language texts.*
Keywords: *Obesity; Text Mining: obesity in ksa ,*

I. INTRODUCTION

The research tackles the obesity problem, which is defined as abnormal or excessive fat accumulation that may damage health .Different methods are used to test overweight and obesity, where body mass index (BMI) is the most common one. BMI is a measurement of weight-for-height commonly used to classify overweight and obesity in adults. It is calculated by dividing a person's weight in kilograms by the square of his or her height in meters **(**kg/m^2**).** The body mass index is the most useful population-level measure in determining obesity as it used to determine the sexual and all ages of adults; however, it should be taken as evidence approximation because it may not be compatible with the same degree of obesity for adults of all ages. The World Health Organization (WHO) defines obesity as a BMI equal to or more than 30 points .This standard provide a benchmark for individual assessment, but there is evidence that the risk of chronic diseases increases progressively from a BMI of 21. Although the World Health Organization (WHO) released in April 2006 a new international growth standard for young children aged birth to 5 years, obesity measurement in children aged 5 to 14 years is difficult to measure because of the lack of a uniform definition of obesity in children. Currently, the World Health Organization is developing an international growth reference for school-age children and adolescence. Here we will review the latest projections that indicate that the level of the world .In 2005, approximately 1.6 billion adults (age 15+) were overweight and at least 400 million people were obese. The WHO estimates that by 2015, approximately 2.3 billion people adults will be overweight and more than 700 billion will be obese in **2005** about 20 million children under 5 years of age will suffer from overweight at the global level. It is not only the high - income countries suffer from overweight and obesity, but also low- and middle-income countries suffer, particularly in urban places.

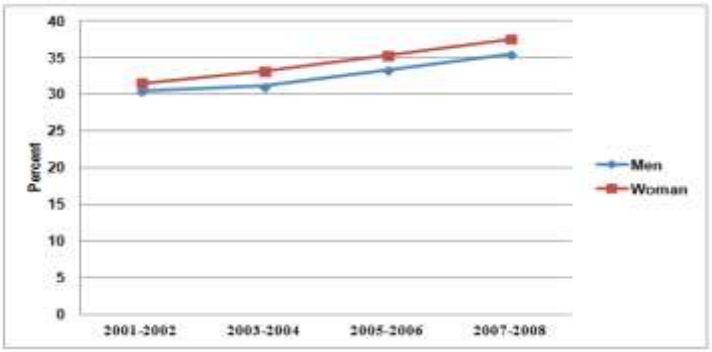

Figure (1) : Trends in obesity by sex, adults aged 20 years and older: , 2001–2002 through 2007–2008.

Approach

Obesity is considered as one of the most pressing public health disorders in the world. The main reason lies behind obesity is an energy imbalance between calories consumed and calories expended beside other factors:
1 - Shift in diet towards increased intake of energy-dense foods that are high in fat and sugars but low in vitamins.
2 - A decrease in physical activity due to the increasingly sedentary nature of many forms of work**,** changing modes of transportation**,** and increasing urbanization

Causes of obesity:

Too much calories:
1 – Overeating
2 - Continuous ingestion of sugars and fatty foods and snacks, as well as fast food.
3 - Emotional disorder and bulimia.
Low energy consumption and lack of exercise:
1 - Watching TV, playing TV games and computer games.
2 - Use a vacuum to study time and heavy homework.
3 – Parents do not encourage their children to exercise.
There are other factors, such as genetic factors and the effects of disease or drugs.
The effects of obesity on the human body
1 - physical impact
Obesity has many side effects on the body, which in turn lead to different diseases , such as increasing the likelihood of high blood pressure, heart disease, diabetes, back pain, arthritis, shortness of breath during sleep .
2 - Social impacts
obesity may cause many social problems among obsesses , such as being less energetic and lazy , lack the spirit of tolerance , lack of enthusiasm towards school activities and more nervous .
3 - Psychological Effects
Obesity may affect self- confidence, particularly in women as well appearance leading to poor self-image.

The BMI is the tool most commonly used to estimate overweight and obesity in children and adults. For adults, overweight and obesity ranges are measured by using weight and height to compute the person's BMI. The BMI is used because, for most people, it correlates with the amount of fat in their bodies. Children grow at different rates at different times, so it is not always easy to tell if a child is overweight or not. BMI charts for children compare their height and weight to other children of their same sex and age. The tables on the right outline BMI scores and weight categories for adults and children. Online tools for gauging the BMIs of children and adults are listed in the Resources section of this fact sheet.

BMI of Adults Age 20 and Older

BMI	Classification
18.5 to 24.9	Normal weight
25 to 29.9	Overweight
30 +	Obesity
40 +	Extreme obesity

BMI of Children and Adolescents Ages 2–19

BMI	Classification
At or above the 85 th percentile	Overweight or obese
At or above the 95 th percentile	Obese

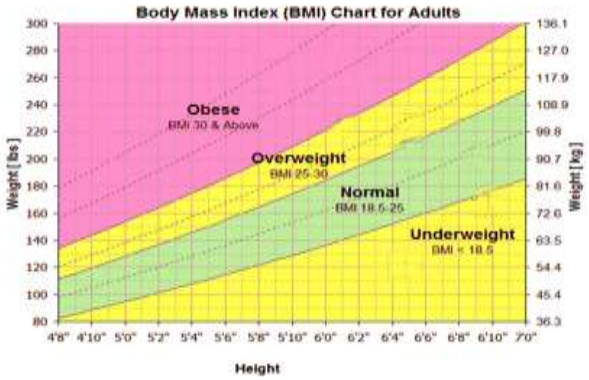

Figure (2): classification of BMI

Overweight and obesity lead to serious health consequences. Risk increases progressively as BMI increases. Raised body mass index is a major risk factor for chronic diseases such as: Cardiovascular disease (mainly heart disease and stroke) - already the world's number one cause of death, killing 17 million people each year. Diabetes – This has rapidly become a global epidemic. The WHO projects that diabetes deaths will increase by more than 50% worldwide in the next 10 years. Musculoskeletal disorders – especially osteoarthritis. Some cancers (endometrial, breast, and colon). Childhood obesity is associated with a higher risk of premature death and disability in adulthood. Many low- and middle-income countries are now facing a "double burden" of disease: While they continue to deal with the problems of infectious disease and under-nutrition, at the same time they are experiencing a rapid upsurge in chronic disease risk factors such as obesity and overweight, particularly in urban settings. It is not uncommon to find under-nutrition and obesity existing side-by-side within the same country, the same community and even within the same household. This double burden is caused by inadequate pre-natal, infant and young child nutrition followed by exposure to high-fat, energy-dense, micronutrient-poor foods and lack of physical activity.

Essential factors for weight control

1. Overweight children and their parents have to acknowledge the fact that it is essential to improve the condition and work out a weight control plan together.
2. Maintain a healthy lifestyle and good eating habits in the family. Parents and other family members should strongly encourage the children to use their determination and confidence to develop good eating habits and to increase exercise level. Do not yield to all their demands and spoil them.
3. Check the children's weight and height regularly in order to increase one's confidence in the process of weight control.
4. Teach children how to handle their emotions appropriate.

Obesity in Saudi Arabia

Here we have applied text mining method to analyze obesity among men and women compared to the material properties depending on the level of obesity has conducted several statistical evidence of the differences between obesity and overweight with controls and standards for the use and testing of the variables factional will be examined variables Will be classified into four age groups (30-39,40-49,50-59, and 60-70), while will be classified as illiterate and education to elementary and middle school and university education and Sue are classified as low-income to $ 16,000 per year and medium to 16,000 in the year to 32,000 in the year and higher income 32,000 a year Will be BMI is calculated using weight (kg) divided by height (m) and will be classified obese subjects on non-obese (BMI _ 25), overweight (BMI BMI and _ mass index of 25 _ 30) or obese (BMI _ 30) and our use of text mining to detect the relationship between the different socio-economic status and variables associated with education and income were related to a very large extent and the ratio of the correlation (P _ 0.001), so it was chosen independent variable income the most important in the life of any person

	N	Female (n = 1648)	Male (n = 1613)	Value
30 – 39 years old (%)	1253	60.02%	39.98%	
Non – obese (%)	346	54.34%	45.66%	
Overweight (%)	432	53.24%	46.76%	
Obese (%)	475	70.32%	29.68%	
BMI		29.64%	27.58%	0.001
40 – 49 years old (%)	944	51.27%	48.73%	
Non – obese (%)	165	37.58%	62.42%	
Overweight (%)	359	41.50%	58.50%	
Obese (%)	420	65.00%	35.00%	
BMI		31.29%	28.47%	0.001
50 – 59 years old (%)	653	41.65%	58.35%	
Non – obese (%)	152	30.26%	69.74%	
Overweight (%)	238	36.55%	63.45%	
Obese (%)	263	52.85%	47.15%	
BMI		30.58%	28.03%	0.001
60 – 70 years old (%)	411	34.06%	65.94%	
Non – obese (%)	109	20.18%	79.82%	
Overweight (%)	167	32.34%	67.66%	
Obese (%)	135	47.41%	52.59%	
BMI		30.39%	27.27%	0.001
All Ages (%)	3261	50.54%	49.46%	
Non – obese (%)	772	41.19%	58.81%	
Overweight (%)	1196	43.48%	56.52%	
Obese (%)	1293	62.65%	37.35%	
BMI		30.34% (6.10)	27.89%(5.13)	0.001

Table (1) : obesity (defined by BMI1) in the Saudi population by gender and age groups

Here we will design forms to collect data on age, sex, nationality and must take measures in terms of weight and body length on the basis of that is the body mass index calculation (BMI) for each child according to the formula approved BMI = weight (kg) / height (m) are rated children to 3 weight categories of normal weight (BMI <85 percentile for age and sex), overweight (BMI between 85-95 percentage index) and obesity has been studied weight categories percentage of the sample by nationality, gender and age groups (2-4, 5-9, 10- 13 and 14-18 years old. (BMI> 95 percentile)

	Normal Weight (Bmi <85 %)		Overweight (Bmi <85 % - 95%)		Obesity (Bmi <95 %)		Total		Value
	No	%	No	%	No	%	No	%	
Nationality									
Saudi	3222	57.5	1048	18.7	1329	23.7	5599	79.4	
Non Saudi	849	58.3	293	20.1	31.5	21.6	1457	20.6	
Age									
2 – 4	1164	62.7	337	18.1	356	19.2	1857	26.3	
5 – 9	1346	60.6	406	18.3	469	21.1	2221	31.5	0.05
10 – 13	709	51.8	276	20.2	384	28.0	1369	19.4	
14 – 18	852	53.0	322	20.0	435	27.0	1609	22.8	
Sex									
Male	2185	55.6	708	18.0	1040	26.4	3933	55.7	0.05
Female	1886	60.4	633	20.3	604	19.3	3123	44.3	
Total	4071	57.7	1341	19.0	1644	23.3	7056	100.0	

Table (2) obesity (defined by BMI1) in the Saudi population by sex and age and nationality

Text Mining

Text mining which is a new area that is trying to extract useful information from natural language text has been described generally as a text analysis process to extract useful information for specific purposes, compared with the type of data used in databases were text description as unstructured difficult to deal with mathematically amorphous and text is the most common means for the exchange of information and here in the field of text mining usually deal with texts that will be derived from factual information or opinions to try to extract information in a manner not convincing .

Expect a lot of researchers used text mining as the main source of information while working to provide new ideas and complete laboratory studies are based on assumptions which are made in laboratories can be derived from text mining and by researchers who are experts in the field of information gathering and by the discovery of other methods to combat certain diseases and the discovery of some new hypotheses for the causes of rare diseases and that while investigating the causes of migraines Swanson extracted information from the article titles in the vital Literature .

Techniques and tools used in text mining

1 - Tokenizing is a document collection serial information under the retrieval of documents has been invested so much effort over the years to take measures to document the similarities in order to calculate the number of terms in common between the documents and this what is called the corresponding coordinates and this representation in conjunction with the classification standard systems of machine learning. Another step is to undertake syntactic analysis on the side of expression and this will help to remove the ambiguity of the different senses of the word and the elimination Lee incorrect analyzes resulting from the scarcity of the senses.

The last basic technique for dealing with the sequence of words is to use Hidden Markov Models 2 - (HMMs). Which is limited models probability as the input sequence analysis by tracking model the flow is in the sense of probability so that the current state of the model through probability distribution to all states and is the all-new icon in the inputs affect this distribution in a manner dependent on the structure of the information at the end of the day position may be the majority of the probability of a particular country and that remove the ambiguity of the initial state, but the entire course of international transformations corresponding to the sequence of input .

Tools

There is a software tools to help with the basic processes of text mining. A , parsers, 20 language models and concordances; several different corpora (large collections, particular languages, etc.); dictionaries, lexical, and morphological resources; software modules for handling XML and SGML documents; and other relevant resources such as courses, mailing lists, people, and societies. It classifies software as freely downloadable and commercially available, with several intermediate categories.

And aimed at a specific part of a development environment for mining text claims text of the general architecture of Engineering to help users develop, evaluate and deploy systems is defined (engineering language) and providing support for applications of text mining standard such as the extraction of important information and also carry out the functions, such as construction and the division of applications.

At the lowest levels will support a range of formats including XML, RTF, HTML, SGML, email and plain text and convert them into a unified model that supports annotation There are three storage mechanisms: a relational database, a serialized Java object, and an XML based internal format and there are documents can be re-exported to its original form without explanation is based on the data encoding to provide support to address the multi-lingual data so that this data is converted into new languages apart from the development of the necessary language resources assigned . tokenize is to comprise the part of speech language includes lists of cities, organizations and days of the week and so on, which applies to the rules laid a hand-written in the language that can describe patterns and facilitates the explanation as a result of that can determine patterns by granting certain strings or annotations that are created by units such as tokenize analysis also include semantic units, which defines relations or entities they contain tools for creating a new language resources and evaluating the performance of text mining systems .

This is one of the gate application is a system to extract entity names that are capable of word processing areas and different species on a large scale has been used to perform confessions and track tasks and entities in several types of texts were also used for the production of official explanations about the important events in the comment text.

II. RESULTS

The outcomes have shown that the main causes behind obesity are food changing, illiteracy and ignorance habits, food shortages and low income. Therefore, it is necessary for all people to eat balanced foods that provide the body with its requirements .Moreover people should modify their dietary behavior .The results also shown that the mining text allows us to collect and extract useful information that lead to the right path away from obesity. Also, studies should be conducted to determine the cultural influences in the development of obesity recognize the social factors associated with obesity and identify the highest risk of obesity and diseases linked to it such as diabetes, high blood pressure. Finally, the study suggests that there should be an effective role for the public media and educational institutions of a society to spread awareness related to health problems of overweight and obesity that may threaten life of people as well as lead to the death.

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