Current Trends Analysis and Predictive Prevalence of Adult Obesity in the Eastern Mediterranean Region (EMR) Compared to Global Trends (2010-2016); Regional Context and Containment Strategies

Hamid Yahya Hussain[1]*, Bushra Abdul Razak[1] and Paul R Clayton[2]

[1]*Dubai Health Authority, Dubai, UAE*
[2]*Institute of Food, Brain and Behaviour, Oxford, USA*

*Corresponding Author: Hamid Yahya Hussain, Dubai Health Authority, Dubai, UAE.

Abstract

Background: The prevalence of overweight and obesity has increased worldwide in the last four decades, reaching 37-38% of the world's adult population in 2013. Rates of obesity are increasing in upper-middle income and high-income countries, and are predicted to be keep increasing in developing nations also.

Objectives: To present the trend analysis of obesity in the adult cohort for the period 2010 - 2016 in the Eastern Mediterranean Region (EMR), and map the predictive prevalence of obesity in the region over the next 5 years.

Methodology: We utilised secondary data reported by the W.H.O. and the World Bank data base (Global Health observatory data repository) updated on 2017 (http//:www.apps.who.int/gho/data). The data we used covered crude obesity rates for the 18+ age group with estimated BMI > 30, as per WHO and World Bank classification. The study design used trend analysis of the last 7 years (2010 - 2016) to predict the adult obesity prevalence for the coming 5-year period (2018 - 2022).

Results: The prevalence of adult obesity in the EMR increased by 3.3% between 2010 and 2016, from 16.1% to 19.4%. In males, the prevalence rose from 11.7% to 14.3%, and in females the prevalence rose from 20.7% to 24.3%. These figures showed a significantly higher baseline and a more rapid increase in adult obesity than the global average.

Conclusion: Adult obesity in the EMR Eastern Mediterranean Region increased in the period 2010-2016 by almost 3.3%, from a baseline and at a rate that exceeds global averages. These facts are indicative of failing health care systems, inadequate social mobilization and an absence of effective intervention strategies. Changes in food policy are indicated, and suggested.

Keywords: Trends Analysis; Predictive Prevalence; Adult Obesity; EMR

Introduction

The prevalence of overweight and obesity has increased worldwide in the last four decades, reaching 37-38% of the world's adult population in 2013 [1]. Rates of obesity are increasing in upper-middle income and high-income countries [2], and increasing in developing nations also [3]. The resulting burden on health care systems is considerable and on current trends is unsustainable, as obesity increases the risk of multiple pathologies as well as reduced fertility [4], and has thus become a leading cause of premature death [5] and demographic decline.

Major factors that drive the global obesity pandemic include urbanization and the shift from blue to white collar employment, with an attendant decline in physical activity levels, and dietary changes. These have, broadly speaking, encouraged a shift from foods with high nutrient density and low calorific density, to processed foods with high calorie density and low nutrient density; simultaneously causing weight gain and dysnutrition, which generally co-present [6,7]. The resulting accumulation of pro-inflammatory central adipose tissue [8,9] and the simultaneous development of insulin resistance [9] has undoubtedly driven the overwhelming increases in metabolic syndrome, NIDDM and the non-communicable degenerative diseases in general. The Middle Eastern and North African region already has the second highest rate of increase in diabetes globally, with the number of people with diabetes projected to increase by 96.2% in 2035 [10].

It has therefore become critical to map current regional trends in order to design an appropriate regional health care response, and to take evidence-based measures where possible, to contain the problem.

Methodology

We utilised secondary data reported by the W.H.O. and the World Bank data base (Global Health observatory data repository) updated on 2017 (http://www.apps.who.int/gho/data). The data we used covered crude obesity rates for the 18+ age group with estimated BMI > 30, as per WHO and World Bank classification. The study design used trend analysis of the last 7 years (2010 - 2016) to predict the adult obesity prevalence for the coming 5-year period (2018 - 2022). We attempted to link current and future obesity trends to a selected array of socio-cultural and economic developments at national, regional and global levels to assist in identifying policy gaps and proposing future containment strategies.

Results

The prevalence of adult obesity in the EMR increased by 3.3% between 2010 and 2016, from 16.1% to 19.4%. In males, the prevalence rose from 11.7% to 14.3%, and in females the prevalence rose from 20.7% to 24.3%. These figures showed a higher baseline and a more rapid increase in adult obesity than the global average, which over the same period increased from 11% to 13.2%, an increase of 2.2%; with males at 9% rising to 11.1%, and females at 13.1% rising to 15.3% (Figure 1).
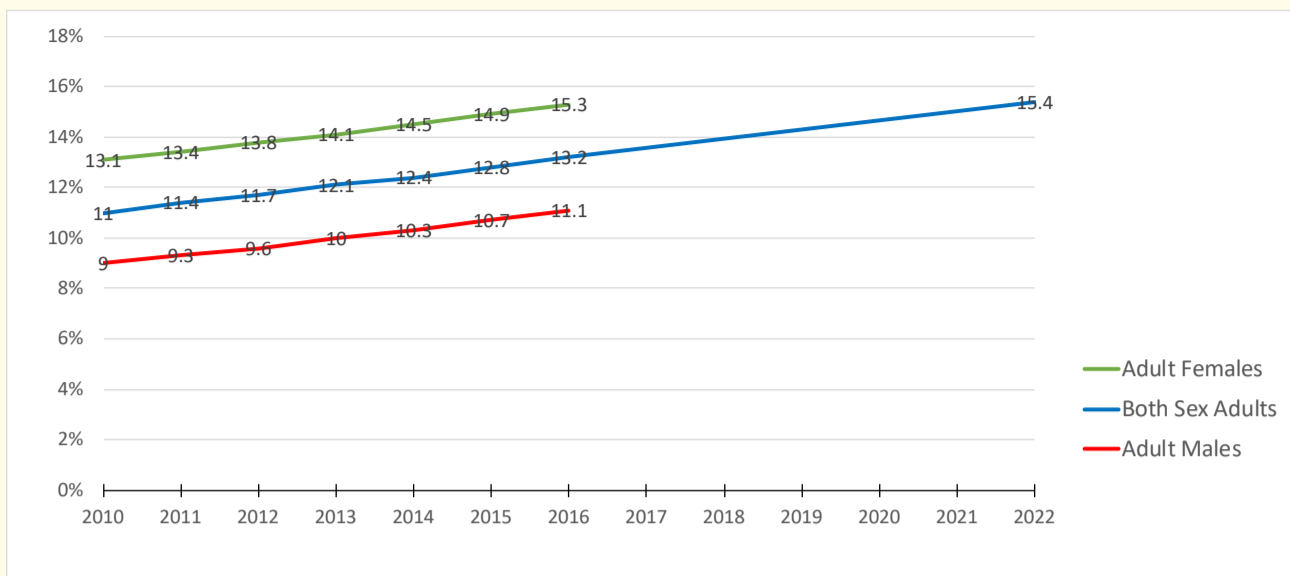
Current Trends Analysis and Predictive Prevalence of Adult Obesity in the Eastern Mediterranean Region (EMR) Compared to Global Trends (2010-2016); Regional Context and Containment Strategies

40

Figure 1: *Trends analysis of adult obesity among Eastern Mediterranean region by gender for 2010-2016.*

Over the same period, global average obesity increased from 11% to 13.2%, an increase of 2.2%; with males at 9% rising to 11.1%, and females at 13.1% rising to 15.3% (Figure 2).
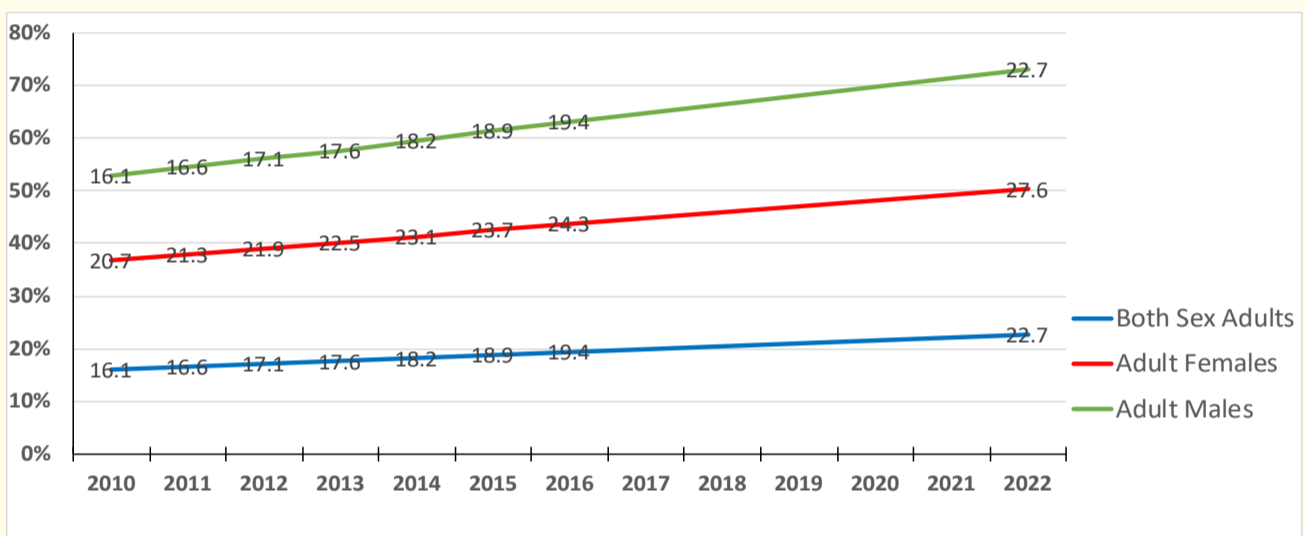

Figure 2: *Global trend of adult obesity according to gender for the 2010-2016.*

Predictive future adult obesity prevalence in UAE

If the surprisingly linear rates of increase recorded over this period continue unchanged, adult obesity in the EMR will reach approximately 22.7%, including 22.7% of males and 27.6% of females by 2022. This is far in advance of the projected global figure of 15.4% of adults.

Discussion

While the major technical and socio-economic drivers of obesity are understood at a global level [11], the extraordinarily high prevalence and increase in obesity in the EMR has specific exacerbating factors. In this region the discovery of oil, and the subsequent accumulation of oil returns on per capita and gross national incomes, has allowed/encouraged a very rapid lifestyle change characterized by increasing use of labor-saving technology, and an accelerating import of processed, ultra-processed and particularly American foods. Many of these combine high calorie density, high glycemic load and high sodium content, with low nutrient content, including inter alia low or very low levels of phytonutrients and fermentable fiber. As they also contain a pathogenic omega 6/3 ratio, their role in causing chronic inflammation and increased smooth muscle tension, the subsequent combination of metabolic and physiological errors that drives the majority of non-communicable disease, is very obvious.

Within the EMR, Kuwait, Quatar, Egypt, Saudi Arabia, Bahrein, United Arab Emirates and Jordan are all among the 20 most obese nations in the world. The deleterious impact of obesity on public health and public health spending is therefore particularly evident in the EMR, and makes it imperative to develop novel regional strategies to reduce or neutralize, where possible, recognized causative factors. This is given further impetus by the fact that in the last 30 years, no country has yet been able to prevent the increase in obesity; despite programs which have variously encouraged physical exercise, discouraged over-eating, produced lower calorie food variants and made calorie content listing of foods mandatory. Clearly, further policy recommendations must be considered.

Recommendations

Ambient temperatures in the EMR necessitate high fluid intakes, and as alcohol is incompatible with the Muslim faith, there is considerable consumption of sugar-sweetened beverages. As these combine large amounts of empty calories with an excessive glycemic load, we recommend a statutory ban of the import of sugar-sweetened beverages and their recommended replacement with low or zero glycemic beverages. We also recommend the use in foods, wherever possible, of non-glycemic sweeteners such as the dihydrochalcones, polyphenols derived from fruits which have anti-inflammatory properties and which as a group are associated with a range of health benefits. Neohesperidin dihydrochalcone (NHDC) is a favoured candidate, as it can be used to extend the sweetness of sugar, thereby enabling glycemic reduction of a wide range of foods without organoleptic penalty. It already has approval for food use in the EU, and approval in the EMR is being sought.

Current Trends Analysis and Predictive Prevalence of Adult Obesity in the Eastern Mediterranean Region (EMR) Compared to Global Trends (2010-2016); Regional Context and Containment Strategies

41

Widespread application of NHDC would be technically easy to achieve in beverages and many foods, and would contribute significantly to reversing the pandemic of obesity and obesity-associated ill health that threatens to overwhelm regional health care systems today.

Ethical Issues

Ethical standards has been applied as per international ethical protocol

Conflict of Interest

The authors declare no conflict of interest.

Bibliography

1. Ng M., *et al*. "Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Burden of Disease Study 2013". *Lancet* 384.9945 (2014): 766-781.

2. Geneva, Switzerland: World Health Organization. "Global status report on no communicable diseases 2010" (2011).

3. Kelly T., *et al*. "Global burden of obesity in 2005 and projections to 2030". *International Journal of Obesity* 32.9 (2008): 1431-1437.

4. Remington PL., *et al*. "Chronic Disease Epidemiology and Control. 3rd edition". Washington, DC, USA: American Public Health Association (2010).

5. Geneva, Switzerland: World Health Organization. "Global health risks: mortality and burden of disease attributable to selected major risks" (2009).

6. Agarwal S., *et al*. "Comparison of prevalence of inadequate nutrient intake based on body weight status of adults in the United States: an analysis of NHANES 2001-2008". *Journal of the American College of Nutrition* 34.2 (2015): 126-134.

7. Kimmons JE., *et al*. "Associations between body mass index and the prevalence of low micronutrient levels among US adults". *MedGenMed* 8.4 (2006): 59.

8. Gregor MF and Hotamisligil GS. "Inflammatory mechanisms in obesity". *Annual Review of Immunology* 29 (2011): 415-445.

9. Olefsky JM and Glass CK. "Macrophages, inflammation, and insulin resistance". *Annual Review of Physiology* 72 (2010): 219-246.

10. International Diabetes Federation. "IDF Diabetes Atlas, 6th edition". Brussels, Belgium: International Diabetes Federation (2013).

11. Malik VS., *et al*. "Global obesity: trends, risk factors and policy implications". *Nature Reviews Endocrinology* 9.1 (2013): 13-27.