Obesity in Lebanon: A Call for Action

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Abstract

The prevalence of obesity continues to increase worldwide including the Arab region, notably in the oil-rich countries. Adolescent obesity is a strong risk factor for adult obesity, thus paving the way for increases in the risk of diabetes, hypertension, heart disease, and breast cancer among others. Based on objective measures of weight and height, measurements obtained from two national cross-sectional surveys conducted in Lebanon in 1997 and 2009, the prevalence of obesity was shown to increase from 7.3% to. 10.9% in the 6–19 year olds and from 17.4% to 28.2% among adults aged 20 years and over. Among participants aged 13-17 years in the 2009 survey, close to 40% inaccurately perceived their body weight, with self-perception showing a stronger association with weight loss effort than actual weight. A sizeable proportion of the population is labeled as physically inactive (68.7%). Study findings highlight an alarming increase in obesity prevalence in the Lebanese population, and calls for a multi-sectorial action plan that takes into consideration weight perception and greater opportunities for physical activities to curb the progression of obesity in Lebanon.

Introduction

The prevalence of overweight and obesity is increasing rapidly worldwide and is emerging as a major risk factor for several chronic diseases of public health significance. The worldwide prevalence of obesity has more than doubled between 1980 and 2014. Currently, close to 39% of adults aged 18 years and over are overweight, and 13% are obese (WHO Fact Sheet, 2015). Evidence from several studies indicates that obesity substantially increases the risk of diabetes, hypertension, heart disease, and breast cancer and impairs quality of life. The pattern of the obesity epidemic over the past few decades has varied across countries and among population subgroups within countries. This variability is greater in developing countries experiencing the nutrition transition, and is partly the result of a higher pace of urbanization, modernization and affluence as well as a concomitant dramatic shift in dietary habits and lifestyles. Particularly rapid rises in prevalence rates of obesity are documented in the affluent Arab counties such as Kuwait (42%) and Qatar (40%), rivaling those of the United States (NG et al, 2011). Lebanon has been classified by the World Health Organization as being in the early stages of the nutrition transition, falling within the same category as other intermediate per capita income countries in the region such as Egypt, Jordan, Syria, Libya, and Morocco.

Trends in Overweight and Obesity rates in Lebanon: 1997 and 2009[1]

The first national study conducted in Lebanon on obesity dates back to 1997 (Sibai et al., 2003). This study showed high prevalence rates in the adult population aged 20 years and older, with 53% being overweight and 17.4% being obese. The respective estimates for overweight and obese children (3-19 years) were also high, reaching 22.5% and 7.5% in boys and 16.1% and 3.2% in girls. While obesity rates were overall higher for boys than girls in the younger age groups, this gender differential is reversed among adult men and women, particularly in class III obesity (BMI ≥ 40.0 kg/m^2) and among the elderly, with women older than 60 years having 3.5 times the risk of being obese than men. Similarly, trends in percentage of body fat and waist circumference with age showed higher estimates up to middle age and a decline thereafter. The significance of waste circumference, as an index of central obesity, is its association with increased risk of metabolic diseases. The lower estimates in older age groups are likely due to weight loss occurring in old age, or alternatively, because of higher risk of mortality for the obese.

In 2009, another national study using similar procedures and data collection methods was conducted, covering a random sample of around 3,635 subjects aged 6 years and over (Nasreddine et al., 2012). The prevalence of obesity was estimated at 10.9% among children aged 6-19 years and 28.2% among adults. At present, these results are lower than those reported in the United States using the National Health and Nutrition Examination Survey data (17% and 36%, among children and adults respectively) (CDC, 2015) and also lower than estimates from several other Arab countries in the region. Yet, these percentages remain higher than those reported from several countries in Europe (range 9.7% and 14.7%) or the world's rates for children and adult population (11.7% and 13%, respectively) (WHO Fact Sheet, 2015). Gender differences in obesity estimates were observed across age groups and obesity classes (I, II and III)[2], with men showing higher prevalence rates at the younger age groups (20-49 years), and women showing higher prevalence rates in older age groups (50 years and above) (Chamieh et al, 2013).

Comparison between the two studies revealed a rapid increase in BMI across all sex and age strata between 1997 and 2009 (from 7.3% to 10.9% among children and from 17.4% to 28.2% among adults), suggesting of a shift in the BMI distribution to the right (Table 1).The increase in weight was more prominent in the younger than the older age groups, with relative changes in mean weight of +42.4% and +31.2% in boys and girls being, respectively, and +8.9% and +5.97% in adult men and adult women, respectively. The increase in mean BMI over the 12 year study period among adults (1.36 kg/m^2 in women and 1.84 kg/m^2 in men) exceeded the recently reported worldwide estimate (0.5 kg/m^2 per decade for women and 0.4 kg/m^2 per decade for men), and surpassed BMI increases in high income countries such as the USA (1.2 kg/m^2 per decade for women 1.1 kg/m^2 per decade for men) (Finucane et al, 2011). Similarly, the annual rates of increase in obesity prevalence among Lebanese adults (+4.1% in Lebanese women and +7.1% in men) were higher than those reported from Arabian Gulf states, where rates of change did not exceed +1.7% in women and +4.1% in men (Ng et al, 2011).

Little is known about the underlying causes of the increasing trends in obesity prevalence in Lebanon. An environment with few constraints on food intake and lack of public spaces for physical activity, with alterations in

Table 1 Trends in obesity prevalence by sex and age for the study population, Lebanon 1997-2009

		Children and adolescents (6-19 years)			Adults (>20 years)		
		Boys	Girls	Both sexes	Men	Women	Both sexes
Obese (BMI z-score> +2)	% 1997	10.2	5.4	7.3	14.8	19.3	17.4
	% 2009	15.5	6.9	10.9	27.4	28.8	28.2
	% Av. Annual change	+4.3	+2.3	+4.1	+7.1	+4.1	+5.2

Adapted from Nasreddine et al. BMC Public Health 2012, 12:798

[1] Definitions: For children and adolescents (less than 19 years of age), overweight and obesity are defined based on sex and age-specific +1 and +2 BMI z-scores, respectively. For adults aged 20 years or older, overweight is defined as a BMI of 25.0 to 29.9 kg/m2 and obesity is defined as a BMI of 30.0 kg/m^2 or higher.

[2] Class I obesity BMI = 30.0 to 34.9 kg/m2; class II obesity BMI = 35.0 to 39.9 kg/m^2; and class III obesity BMI = 40.0 kg/m^2).

the Lebanese population's food consumption patterns and lifestyle may have contributed to the increase in obesity rates. Studies on food consumption patterns of the Lebanese young and adult population show a shift toward increased intake of fat, milk, and animal protein, and a decrease in the intake of complex carbohydrates. Concomitantly, paternal education has been suggested as one of the factors modulating obesity risk in childhood. Total screen time including television viewing, computer and videogames, and sedentary behavior (defined as ≥ 10 h sitting time per day) increase the risk of overweight and obesity among children.

Similar to other countries of the Eastern Mediterranean Region, Lebanon is now facing a fast rate of development and urbanization, with 90% of the Lebanese population being currently classified as urban. This is accompanied by a concomitant nutrition transition characterized by changes in food supply and intake in addition to reduced physical activity (Sibai et al., 2010). Trends in dietary patterns in Lebanon illustrate a consistent rise in total energy supply, amounting to 850 kcal per capita per day between 1970 and 2005, raising serious concerns regarding further increases in obesity rates in the country.

Childhood and Adolescent Obesity: Objective vs. Perceived Measures

In recent years, more attention has been directed toward childhood and adolescent obesity. Studies indicate that the higher the childhood BMI percentile, the greater the risk of becoming an overweight adult (Gordon et al, 2010), paving the way for chronic diseases such as cardiovascular diseases, certain types of cancer, and metabolic conditions among others. As adult obesity is difficult to treat, identification at an early age of individuals who are at a high risk of obesity becomes especially important because it allows for introduction of early preventive strategies.

More than any other period in life, the transition from childhood to adulthood is contingent on the interplay of physical, psychological and cultural forces, with immense physiological changes in weight, height and body composition that can impact on adolescent's perceptions of body image and body weight. These do not necessarily reflect the actual body weight. Indeed, data from the U.S. and other countries indicate a sizeable proportion (30%) of 'overweight' students in 9th through 12th grade who misperceive themselves as 'the right weight' (Edwards et al., 2010). Self-perception of overweight rather than actual body weight has been found to be the major significant contributor to weight loss attempts. Similarly, data from the 2009 study on adolescents aged 13-17 years in Lebanon (n = 278) show that close to 40% inaccurately perceive their body weight, with misperceives being more likely to overestimate than underestimate their body weight (Assad et al., nd). Compared to BMI, perception of body weight was a stronger predictor for weight loss and dietary behaviors among adolescents in the Lebanese context. Similar findings were obtained in an earlier study conducted among secondary school students in Beirut. (Sibai et al, 2003b). To date, surveys assessing factors related to differences in weight loss behaviors among adolescents in Lebanon and the region Arab countries are scarce. Future studies need to be directed towards a better understanding of the role of weight perception in influencing weight management behaviors and the different activities that adolescents turn to for weight loss.

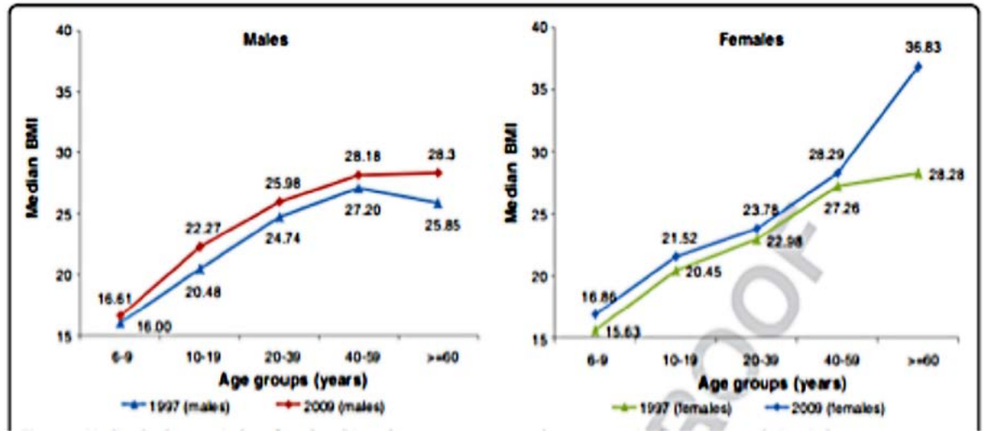
Public Health Implications

These findings from Lebanon carry public health implications. The observed increasing trend in obesity among Lebanese children and adolescents entails co-morbid health consequences. Associations between BMI and chronic diseases follows a dose-response relationship, with each 5 kg/m2 increase in BMI above the optimal range of 22.5–25 kg/m2 being associated with a 30% increase in all-cause mortality (40% for vascular; 60–120% for diabetic, renal, and hepatic; 10% for neoplastic; and 20% for respiratory and for all other mortality (Prospective studies, 2009). Other studies have shown that for every 1-kg increase in weight, the prevalence of diabetes rises by 9% (Mokdad et al., 2000). A recent study from Lebanon indicated that the prevalence of the metabolic syndrome among prepubertal obese Lebanese children (31.9%) is considerably high, surpassing that reported among obese children from several parts of the world (Nasreddine et al., 2010). With those below 20 years making up close to 50% of the Lebanese population, these estimates do not bode well for the health and wellbeing of the population.

Obesity is preventable, and the extent of our understanding of disparities in prevalence rates across various geographic districts and socio-demographic subpopulations is a major key to our efforts in planning culturally appropriate and relevant health promotion activities. Analysis of the 2007 data revealed regional variation in the prevalence of obesity ranging from 12% in the capital city to as high as 26% in the south, an underprivileged area in Lebanon. While a sizeable proportion of the population is labeled as physically inactive (68.7%), physical activity as a method of losing weight is least common among overweight adolescents and the lower socioeconomic status (Sibai et al., 2003b).

Whereas further studies are needed for examination of the sociocultural, economic, and behavioral factors associated with actual BMI, perceived BMI and weight gain, now is the time to start implementing multicomponent interventions, at the societal and individual level. Health professionals may play a key role in promoting regular physical activity to curb the progression of obesity in Lebanon. Other means of interventions may use mass media to influence nutritional norms, practices, and personal choices. Municipalities need to provide public spaces (parks, public beaches, and walking/bicycle lanes) that would encourage physical activity and to consider the 'walkability' of neighborhoods in their urban planning, Interventions aiming at better health awareness and more physical activity should be monitored for their effectiveness over the years.

Figure 1 Median body mass index of study subjects by sex, age group and survey year in the study population, Lebanon 1997-2009.



Duplicated from Nasreddine et al. BMC Public Health 2012, 12:798

References

CDC. National Center for Health Statistics, Prevalence of Obesity among Adults and Youth: United States, 2011–2014, http://www.cdc.gov/nchs/products/databriefs/db219.htm

Chamieh MC, Moore H, summer bell C, Tamim H, Sibai AM (corresponding), Nahla Hwalla (2015). Diet, physical activity and socio-economic disparities of obesity in Lebanese adults: Findings from a national study. BMC Public Health, 15: 279 (DOI 10.1186/s12889-015-1605-9).

Edwards NM, Pettingell S, Borowsky IW. Where perception meets reality: self-perception of weight in overweight adolescents. Pediatrics. 2010 Mar 1; 125(3):e452-8.

Finucane MM, Stevens GA, Cowan MJ, Danaei G, Lin JK, Paciorek CJ, Singh GM, Gutierrez HR, Lu Y, Bahalim AN, Farzadfar F. National, regional, and global trends in body-mass index since 1980: systematic analysis of health examination surveys and epidemiological studies with 960 country-years and 9• 1 million participants. The Lancet. 2011 Feb 18; 377(9765):557-67

Gordon-Larsen P, The NS, Adair LS. Longitudinal trends in obesity in the United States from adolescence to the third decade of life. Obesity. 2010 Sep 1;18(9):1801-4.

Mokdad AH, Ford ES, Bowman BA, et al. Diabetes trends in the US: 1990 to 1998. Diabetes Care. 2000; 23: 1278–83.

Nasreddine L, Ouaijan K, Mansour M, Adra N, Sinno D, Hwalla N. Metabolic syndrome and insulin resistance in obese prepubertal children in Lebanon: A primary health concern. Annals of Nutrition and Metabolism. 2010 Nov 9; 57(2):135-42

Ng SW, Zaghloul S, Ali HI, Harrison G, Popkin BM. The prevalence and trends of overweight, obesity and nutrition-related non-communicable diseases in the Arabian Gulf States. Obesity Reviews. 2011 Jan 1; 12(1):1-3.

Prospective Studies Collaboration, Whitlock G, Lewington S, Sherliker P, Clarke R, Emberson J, Halsey J, Qizilbash N, Collins R, Peto R: Body-mass index and cause-specific mortality in 900,000 adults: collaborative analyses of 57 prospective studies. Lancet 2009, 373:1083–1096.

Sarah Assaad, Sirine Anouti, Farah Naja, Nasreddine Lara, Nahla Hwalla, and Abla Mehio Sibai Self-perceived weight is a stronger factor in weight loss efforts and inappropriate dietary behaviors than actual weight status among Lebanese adolescents: Findings from a national study (not published)

Mehio-Sibai A, Kanaan N, Chaaya M, Rahal B, Abdullah A, Sibai T. Ethnic differences in weight loss behavior among secondary school students in Beirut: the role of weight perception. Sozial-und Präventivmedizin. 2003 Jul 1;48(4):234-41

Sibai AM, Nasreddine L, Mokdad A, Adra N, Tabet M, Hwalla N (2010). Nutrition transition and cardiovascular disease risk factors in the MENA Countries: Reviewing the evidence Annals of Nutrition and Metabolism Journal, 57:193-203.

World Health Organization. Obesity and overweight. Fact sheet N°311. Updated January 2015. http://www.who.int/mediacentre/factsheets/fs311/en/