Part 2: A Closer Look at Urbanization and Economics

An obesogenic environment was defined by Swinburn et al. in 1999 as "the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations" (as cited in Gauthier & Krajicek, 2013). In 2003, Hill, Wyatt, Reed, and Peters specifically defined an obesogenic environment as "one that promotes excessive intake and sedentary behavior in individuals" (as cited in Gauthier & Krajicek, 2013). Microenvironments include retailers, homes, schools, work, sports, and recreation. Environments may be categorized as "micro" (e.g. retailers, homes, schools, work, sports) or "macro" (e.g. transportation, agriculture, marketing, and technology) (Gauthier & Krajicek, 2013). Urbanization and economics are two very interrelated macroenvironments both closely related to obesity and the present cardiometabolic pandemic.

Starting around the 1970s to 1980s, obesity was on the rise amongst the high-income countries concurrently, with the mid to low income countries following suit shortly after (Swinburn et al., 2011). By 2008 an estimated 1.46 billion adults worldwide were clinically overweight; 502 million adults were clinically obese; and about 170 million children were overweight or obese (Swinburn et al., 2011).

For low and mid-income countries, populations with high socioeconomic status in urban areas tended to display higher obesity levels first, followed by (shifting towards) the low socioeconomic status urban and rural areas as the country's gross domestic product (GDP) rose/increased (Swinburn et al., 2011). In general, the 45-59 year old demographic experienced the highest levels of overweight, and women's obesity rates were higher overall as compared to men's (Swinburn et al., 2011).

"Sufficient" wealth was the most significant precondition for emerging/rising obesity in a population with a positive linear relationship between the GDP and average body mass index (BMI) up to $5000 per person per year (after which GDP and BMI are almost flat line) (Swinburn et al., 2011). In 1980, cardiovascular disease (CVD), average BMI, systolic blood pressure (SBP), and serum total fasting cholesterol (TC) positively correlated to national income and Western diet (Danaei et al., 2013). Over the years some of these relationships have changed, but by 2008, TC was still strongly positively associated with national income levels (Danaei et al., 2013). Today, BMI still remains significantly positively related to the degree of urbanization regardless of income or adoption of Western style diets (Danaei et al., 2013). Prosperity is an enabler and predictor, and a country's affluence does not have to be comparatively high for the obesity pattern to occur; even a small increase in affluence and living standards may be enough to disturb the "balance" and introduce health risks (Swinburn et al., 2011).

Riha et al. (2014) introduced an urbanicity score based on 7 components: population size, economic activity, built environment, communication services, educational facilities, health services, and diversity. The urbanicity score described features of urban life such as reduction in agricultural occupations, increases in education, and access to more services and conveniences (Riha et al., 2014). Riha et al. (2014) also identified generally accepted lifestyle risk factors: smoking, heavy drinking, low fruit/vegetable intake, low physical activity, high BMI, high waist circumference (WC), and SBP. Riha's et al. (2014) survey of Kyamulibwa, Uganda (7340

residents in 25 villages) found that the significant presence of the lifestyle risk factors directly correlated to the villages' urbanicity score--the more urban and less rural a village was, the more prevalent the risk factors. Rising urbanicity and development was also related to increased type 2 diabetes and hypertension (Riha et al., 2014). Riha et al. (2014) also noted that urbanicity may also be described in terms of scale, but either way, levels of urbanicity are related to cardiometabolic risk factors. India and Cameroon found similar results as Riha's et al. (2014). In India, there was an estimated 1mm Hg increase in SBP per decade of urban exposure (Riha et al., 2014). Other studies have shown that greater urbanicity usually also resulted in increased energy consumption and decreased energy expenditure along with energy-rich diets/available foods and increased sedentary behavior (Riha et al., 2014).

Urban landscape resulting from "urban sprawl" (a description of population density with respect to development density) includes consideration of built locations and their respective distances from each other and also from residences (Guettabi & Munasib, 2014). Modern urban/sub-urban developments fail to plan and incorporate space for physical activity and recreation such as parks, community centers, skate parks, trails, bicycle lanes, etc. (Guettabi & Munasib, 2014). Oftentimes, there is nothing to do except go to fast food or other restaurants to "hang out" or places like theatres or malls which are not conducive to physical activity, natural play (with respect to children), and having a positive outlet for energy.

Transportation or "walkability" is another common issue in urban sprawl. Either the population is packed into a respectively small "spread" such that major built locations are too close together or too dense (i.e. density of fast-food stores) or the population is spread where built locations are too far apart to walk/bike in a reasonable amount of time (Fuzhong, Harmer, Cardinal, Bosworth & Johnson-Shelton, 2009); Guettabi & Manuasib, 2014).

Urban developments in which surroundings are "unsafe", the housing and amenities are poor, and access to parks/walkways/bike trails are limited are reflected on the 20-60% higher child obesity rates. Guettabi and Manuasib (2014) noted that the Centers for Diseases Control (CDC) reported the sharp rise in childhood obesity can be traced back to the design/development of communities with restricted access to recreational activities. Unfortunately, access to recreational facilities and green areas (e.g. parks) are directly correlated to socioeconomics as well and whether a demographic area is deemed "low" or "high" income (Guettabi & Manuasib, 2014).

Urbanacity and economics introduce many factors and considerations to the dynamic problem of the obesity and cardiometabolic pandemic. When health and fitness professionals say that making changes (like losing weight) towards better health and healthful choices is a "lifestyle change", it truly is a lifestyle change when you consider all the environmental factors that directly affect a person on a daily basis, and then include all the macrosystems.

References

Danaei, G., Singh, G. M., Paciorek, C. J., Lin, J. K., Cowan, M. J., Finucane, M. M., & ... Ezzati, M. (2013). The global cardiovascular risk transition associations of four metabolic risk factors with national income, urbanization, and western diet in 1980 and 2008. *Circulation*, *127*(14), 1493-1502. doi:10.1161/CIRCULATIONAHA.113.001470

Fuzhong, L., Harmer, P., Cardinal, B. J., Bosworth, M., & Johnson-Shelton, D. (2009). Obesity and the built environment: Does the density of neighborhood fast-food outlets matter?. *American Journal Of Health Promotion*, *23*(3), 203-209.

Gauthier, K. I., & Krajicek, M. J. (2013). Obesogenic environment: A concept analysis and pediatric perspective. *Journal For Specialists In Pediatric Nursing*, *18*(3), 202-210. doi:10.1111/jspn.12027

Guettabi, M., & Munasib, A. (2014). Urban sprawl, obesogenic environment, and child weight. *Journal Of Regional Science*, *54*(3), 378-401. doi:10.1111/jors.12123

Riha, J., Karabarinde, A., Ssenyomo, G., Allender, S., Asiki, G., Kamali, A., & ... Seeley, J. (2014). Urbanicity and lifestyle risk factors for cardiometabolic diseases in rural Uganda: A cross-sectional study. *Plos Medicine*, *11*(7), 1-16. doi:10.1371/journal.pmed.1001683

Swinburn, B. A., Sacks, G., Hall, K. D., McPherson, K., Finegood, D. T., Moodie, M. L., & Gortmaker, S. L. (2011). Series: The global obesity pandemic: shaped by global drivers and local environments. *The Lancet*, *378*804-814. doi:10.1016/S0140-6736(11)60813-1