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Harmful ramifications of secular growth

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Abstract

For the last century or more, health practitioners have viewed increasing birth weight, rapid growth and taller height as desirable trends resulting from improvements in human nutrition and environmental conditions. Although we have made progress on many fronts, considerable evidence supports the view that we have gone from malnutrition due to lack of food to malnutrition due to excessive nutrition. The result has been an epidemic of chronic diseases and obesity. In contrast to pro-growth supporters, biologists and other scientists have favored the well-established rule that within a species, smaller individuals tend to be healthier and longer-lived. Modern evidence, including biological parameters, now shows that modification of the affluent diet and smaller body size could substantially improve our health and longevity.

Introduction

Our society and much of the medical establishment have viewed secular growth as beneficial based on health, life expectancy and physical robustness. Support for this belief comes from increasing life expectancy, which is primarily due to reduced infant mortality, improved sanitation and hygiene. However, while the medical profession is highly effective in keeping sick people alive, the basic health of Americans is poor due to the high incidence of many avoidable diseases. For example, a 2011 Gallup Poll found that 86% of full-time workers in the US were overweight, obese or had a chronic illness [1].

Obviously, chronic diseases have increased in parallel with increases in height and weight. In addition, a comprehensive report by the World Cancer Research Fund [2] clearly stated that today's chronic diseases were uncommon (even among the elderly) until urbanization and industrialization. Yet, we were 3 to 4 inches shorter before industrialization.

About 15 years ago, Elrick, Storms and Samaras reviewed the ramifications of promoting higher birth weight, rapid growth and taller height [3,4]. It was concluded that these factors were related to obesity, cancer, heart disease, diabetes and reduced longevity. In addition, it was shown that over nutrition rather than healthful nutrition was an important cause of increased height and lean body mass. Evidence was also presented showing that lower birth weight and adult height were not related to lower IQ when adjusted for differences in socioeconomic status [3]

Many studies have confirmed our findings. For example, Lorenzini [5] reported that studies of ~800 mammalian species found that slower and protracted growth improves health and longevity within a species. In regard to birth weight, a remarkable report on Japan showed that birth weight has dropped in parallel with stabilization in adult height compared to previous decades [6]. In spite of lower birth weight and shorter height than most Western populations, the Japanese have the second lowest infant mortality rate and the second greatest life expectancy in the world. A reason for the drop-in birth weight was due to Japanese women reducing their caloric intake during pregnancy to avoid gaining too much weight. Note that it has been shown repeatedly that birth weight correlates with adult height, weight and body mass index.

Another observation involves the rise of cancer risk with height; e.g., for example, Nunney and other researchers have observed that the evidence "showed conclusively" that height is positively correlated with most cancers [7].

Many believe taller height is healthier because numerous epidemiological studies have found taller people have lower coronary heart disease (CHD) than shorter people. The reasons given for the higher levels of CHD among shorter people include smaller blood vessels and reduced arterial compliance. The belief that shorter people are inherently at higher risk of heart disease presents a serious paradox. For example, during the last hundred years, the populations of the US and UK have seen parallel increases in height and chronic diseases, including CHD. In addition, in the early 1900s, CHD was rare when people were shorter. In fact, CHD and other chronic diseases were uncommon before the industrial revolution [2]. More recently, studies of the Solomon Islands and Kitava found no evidence of CHD or stroke in these short (~5'4") populations [8]. In addition, within the US, the shortest ethnic groups were found to have much lower heart disease mortality than the tallest groups. About 30 shorter populations with low CHD are identified in a review of worldwide CHD [8].

Another fact that challenges the belief that shorter people have higher CHD vs. taller people involves lower CHD in shorter women. e.g.; women are shorter than men and have less heart disease. In addition, the relatively short Japanese have one of the lowest rates of CHD mortality in the world. This advantage is unlikely due to genetics because when homeland Japanese males are compared to Japanese males in the US, heart disease in Hawaii and California increases linearly with increasing height from Japan to California. A number of analyses of developed populations have found that height is inversely related to life expectancy or average age at death [9] For example: Table 1. Inverse relationship between height and longevity.

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Table 1. Inverse relationship between height and longevity.

Population	% taller cohorts	% shorter longevity
California whites	9	9.1 (males vs. females)
California Asians	7.8	7.7 (males vs. females)
Baseball players	4.5	4.4 (males vs. males)
VA Medical Center	6.4	6.9 (males vs. males)

The preceding relationships demonstrate a close inverse relationship between height and longevity. However, some groups show larger differences than shown in the table; e.g., California blacks showed an 8.7% taller height for males vs. an 11.7% lower life expectancy compared to black women. Other more recent comparisons have been closer to the four preceding examples.

It should be pointed out that animal studies support the smaller is longer- lived thesis. For example, studies have found big dogs have much higher rates of heart failure compared to small dogs; [8] e.g., the Great Dane has 60 times the risk of dying from heart failure as a miniature Dachshund. In addition, the larger standard Dachshund has 7 times the risk compared to the miniature breed. Studies of dogs have shown smaller breeds live longer than larger breeds [10]. It is unlikely that this would occur if the smaller breeds were inclined to have heart problems, especially with such a large difference in heart size between smaller and bigger dogs.

Most mortality studies support a lower mortality for taller people, but these studies cover a smaller age range and rarely track the entire population to the end of life. In contrast, almost all longevity studies that look at an entire deceased population show shorter people live longer. Differences among studies are also related to socio-economic and other confounders. For example, the increased longevity of shorter people is about 10%. Thus, genetics, lifestyle, nutrition and other factors can negate this advantage. In addition, differences in longevity may not show up until after 60 or 70 years of age. This is what was found by Mueller and Mazur [11] when they studied retired West Point graduates. They found that after 60 years of age, shorter officers lived longer.

In addition to the author's evidence (~50 publications), the greater longevity of shorter people is supported by the findings of over 25 other researchers or institutions. Examples include Lemez, Chmielewski, He, Miller, Chan, Holzenberger, Salaris and Poulain and Richardson [11-19]. Bartke [20], an eminent longevity researcher, reviewed the evidence supporting the relation between smaller body size and longevity and concluded that smaller size humans are more likely to live healthier and longer lives due to lower levels of growth stimulating hormone. For more research on this area, see: www.humanbodysize.com.

Another longevity consideration is that the highest percentages of centenarians are found in short populations, such as Okinawa, Japan; Bama, China; and Sardinia, Italy [21]. Out of 11 centenarian studies, almost all involved short people (adjusted for shrinkage with age). An exception is based on 174 WWI veterans who reached centenarian status. Men who were of medium height at recruitment represented the highest percentage and tall men were second [22]. Specific heights were not provided in this paper but recruits during WWI averaged a little over 5'7". (Of course, this was a select group due to filtering of unfit recruits. For example, a study of WWI recruits found that taller recruits had more heart problems.) In contrast, a preliminary report of 2500 Italian centenarian found that being short and lean was an advantage for reaching 100 years of age. (Upper Italy-Longevity: upperitaly.corrispondenti.net/index.php?id=8)

Besides the extensive human evidence provided by these documents, animal studies and biological parameters provide additional support. For example, 36 biological parameters are related to shorter height, lighter weight and lower body mass index, such as longer telomeres and lower insulin-like growth factors, and these parameters promote greater health and longevity [23]. In addition, numerous scientists and researchers support the thesis that smaller individuals within a species are healthier and live longer; e.g., "…. biologists are firmly convinced that a small body size is preferable for longevity. "p. 82 [22].

In view of strong longevity findings, why is there a conflict with mortality studies? As mentioned, height contributes about 10% to the longevity picture. Other factors include genetics, economic and educational status, smoking, overweight, and stress. In addition, rapid growth during childhood tends to promote overweight and later chronic diseases of aging [3,4]. Thus, low birth weight children that grow rapidly are vulnerable to future health problems but are still shorter than their peer group. Another confounder is retarded growth due to infections and traumas during childhood. These infections and traumas often affect adult health and reduce longevity.

Another confounding factor is whether a person has spent all his/her life in a higher income status or has risen from a lower income status to the higher level later in his/her life. Men who have spent all three phases of their lives in higher income status, are the tallest and have the lowest CHD and all-cause mortality [24]. Those who have spent all their lives in a lower bracket are shorter and have the highest CHD and all-cause mortality. People of mixed economic backgrounds are in between the two extremes in terms of height and mortality. Failure to account for these differences can lead to inaccurate study results. Another cause for confounding is BMI. If we compare a population of 10% taller individuals to a shorter cohort, a taller cohort should be selected that has a 10% higher average BMI so that equivalent body types are compared. We are not aware of any studies that have done this.

As far as athletic performance and intelligence go, many studies indicate that short people make excellent athletes and have normal IQs. In fact, a Finnish study found that groups of boxers, long-distance runners, cross-country skiers, wrestlers and weightlifters averaged shorter than the average military recruit [25].Of course, gymnasts and many martial artists tend to be short. Examples of world-class athletes include Olympic gold winners, such as weightlifter Suleymanoglu (4'10") and gymnast Simone Biles (4'8").

Shorter people generally make less money because higher socioeconomic people tend to be taller than lower income people and have many advantages due to their better environment and opportunities. With our current bias favoring tallness, it is clear that shorter people face a more difficult road to success than taller ones. Yet, Andrew Carnegie, Aristotle Onassis, Armand Hammer, Michael Bloomberg, David Murdock, and Mark Zuckerberg are or were exceptionally successful in the business world and ranged in height from 5'3" to ~5'7. In addition, many movie stars, scientists and leaders were short. Also, Muller and Mazur [11] found that success in the military is essentially unrelated to height. They found promotions were not based on height during the careers of West Point graduates.

Besides better health and longevity, ecological analysis indicates that smaller people leave a much smaller footprint on the earth and represent a much better ecological choice for future generations [26]. For example, a 10% increase in US height with the same body proportions will require addition 50 million tons of food and 30 trillion

gallons of water per year. In addition, a billion tons of CO2 will be generated annually. The leaders of the world need to consider the 1998 comments of the eminent British nutritionist, John Waterlow, (p 1104) [27].

"If everyone were to achieve the height now common in industrialised countries, the height explosion would be almost as disastrous as the population explosion, carrying with it the need not only for more food, but for more clothing, more space, more natural resources of all kinds."

Conclusion

In conclusion, the affluent diet and promotion of higher weight infants, rapid growth and greater height and weight has led to the obesity epidemic and widespread chronic diseases. Greater efforts are needed to improve our health by reducing calories and growth promoting foods, like milk [28] and animal protein [21]. In addition, a population of 10 billion people places our environment and survival under serious threat. It's time to give up the recommendations of earlier nutritionists and to promote smaller body size for humanity.

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