

Meridian Technical Charter High School

Poverty & Nutrition

A Growing Problem

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Abstract

The purpose of this paper is to illustrate how poverty negatively impacts nutritional health and, in turn, life longevity, mental acuity, and quality of life. In addition to negatively impacting human biology, poverty and malnutrition damage socioeconomics. Poverty is a growing problem, not only in the United States but around the world. With the population of Earth growing exponentially and the scarcity of resources, jobs, education, money, and food increasing, we are posed with a very real problem. Social action and economic action needs to be taken in order to rid the world of this epidemic that impacts our society acutely and chronically. However, the solutions to these problems may demand social reformation.

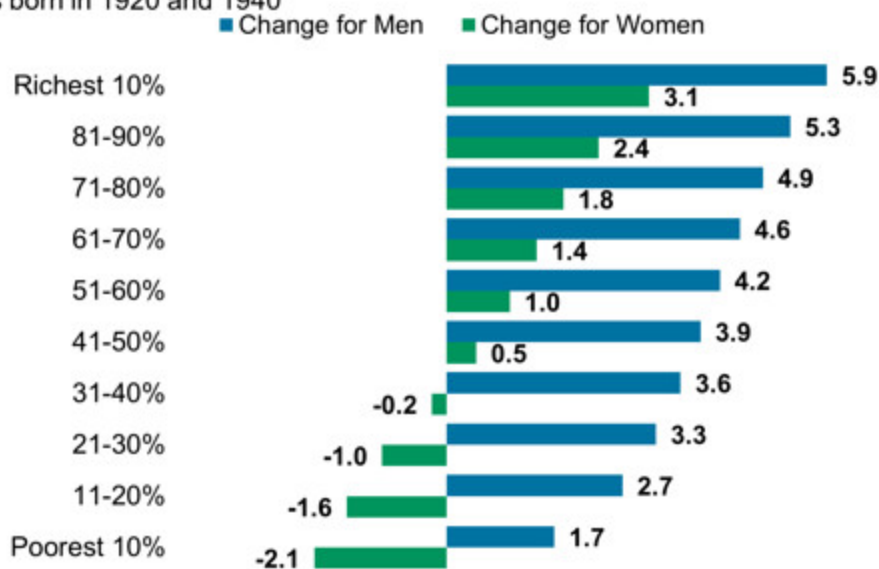
Malnutrition started with the simple act of cooking. Cooking decreases the nutritional value in food, an effect called micronutrient deficiency. This form of malnutrition causes more strain on the body over time, thereby decreasing the average lifespan. Malnutrition was propagated by processing and the use of filler ingredients. Both of these modifications decrease the nutritional value in food. Since technology is widespread in our day and age, it is impossible to imagine any continent unaffected by this degradation in food quality. Only the most socially adept, and conscious countries, have minimized the negative effects of processed foods. The poorest countries, on the other hand, take what they can get, and therefore fall prey to the unhealthy food choices that plague our diets. This goes to show how, around the world, poverty is a negative factor when it comes to nutrition. Since both poverty and malnutrition are global problems, it is imperative that a global effort is made to rid our diets of detrimental chemicals and low nutritional values. The solution demands a global trend toward diets comprised namely of raw fruits and vegetables, and ridding our diets of known detrimental chemicals and malnutrition from faux food.

Malnutrition is responsible for roughly half of the global suffering, and is directly responsible for one fifth of disabilities and loss of years of life (Haddad). Global malnutrition is perhaps one of the most serious and underestimated problems our society faces. Malnutrition is directly correlated with poverty according to the United Nations, who set a Millennium Development Goal (MDG) in 1990 to halve extreme hunger and malnutrition by 2015. According to the United Nations, this MDG was accomplished in 2012. Nutrition is such an important topic in our lives that the right

to adequate food is written into several countries constitutions, including Guatemala, Peru, India, Ethiopia, and South Africa. It is also considered a basic human right in the Universal Declaration of Human Rights ("Millennium Development Goals (MDGs)."). Still, though, there are more than three-billion people living in poverty in the world. More widely available information on nutritional health, paired with industry regulation is necessary to prevent and extinguish the global problem of malnutrition and undernutrition. In fact, a recent study has shown the lifespan gap between the richest ten percent, and the poorest ten percent. The figures are demonstrated in the figure labeled "Change in Life Expectancy" and clearly indicate that poverty is negative factor when it comes to health and longevity. A large part of this lifespan gap is due to nutritional factors, although nutrition is not the only cause (Thompson).

Change in Life Expectancy

Change in average additional life expectancy (in years) at age 55, by income, between cohorts born in 1920 and 1940



Source: Barry Bosworth, Brookings Institution | WSJ.com

In the same way nutrition affects lifespan, it has a big affect on physical aging.

The aging process is a complex mechanism that is the product of several factors. One factor is telomere length. When DNA replicates itself, it copies your DNA telomeres. These telomeres shorten slightly every time they are replicated as a way to iterate controlled cell division and prevent cancer. The healthier you are, and the better you eat, the better the telomeres will be copied and the less degradation the telomeres will experience and cause in your body. The shortening of telomeres is a proposed mechanism that contributes to aging. In fact, an obese person is roughly nine years older, according to their telomere length, than a lean person of the same age simply because nutritional health is integral to our bodies most basic functions (Mathers).

Another major factor in telomere degradation is stress, which undoubtedly occurs at a much higher rate with the poorest ten percent, than the richest ten percent. Stress also negatively impacts inter-cellular organelles like mitochondria. Another factor that causes aging relates to telomere length. As your telomeres degrade they copy your DNA in a degraded state. This degradation causes an accumulation of cell damage that develops into functional impairments in organs, thereby causing age-related frailty, chronic diseases, and disability (Mathers).

Interestingly enough, a direct correlation can be found between the number of calories consumed, and life expectancy. Rodents in labs that were given twenty percent less calories lived twenty percent longer. This correlation also applies to humans. Researchers say that they do not intend for people to reduce their caloric intakes but, instead, are researching how this correlation can be used to stop aging in a more convenient way. Starved rodents were observed to maintain a mechanism that

prevents somatic cell damage from accumulating, and the degradation of the bodies ability to heal itself was also delayed. For all intensive purposes, starvation will keep one youthful for longer, but not to the effect of malnutrition (Mathers).

A recent study has shown that the country Chad has the least healthy food choices out of any country in the entire world ("Netherlands Named Healthiest Country in the World"). The average life expectancy in Chad is approximately 49.52 years ("Life expectancy at birth, total (years)."). Already, you can see how unhealthy food affects life expectancy, but of course there are other factors like the genocide in Darfur. On the opposite side of this spectrum, the Netherlands, which was deemed as the country with the healthiest food choices ("Netherlands Named Healthiest Country in the World") has an average life expectancy of 81.2 years ("Life expectancy at birth, total (years)."). Nutritional health could affect life expectancy by up to 31.68 years according to these figures. The real number is realistically more like fifteen years, as I discussed in my previous essay, "Nutritionally Bereft". At a minimum, these figures demonstrate the life expectancy change between countries stricken with poverty, like Chad, versus the life expectancy of economically sound and nutritionally aware countries, like the Netherlands. Since poverty and nutrition are correlated, this is a good indicator that there is a strong correlation between poor nutritional health and a reduced life expectancy.

Nutrition is so integral in our lifetime that it affects socioeconomics. A study has shown that "an increase in birthweight of one pound leads to a 7 percent increase in lifetime earnings for a sample of U.S. babies." These findings indicate that

nutritional deficiency in the early years of cognitive development leads to problems with educational attainment, cognitive ability, and labor productivity. This effect can be observed on the macroscopic scale in a study published in the 1990s for several Asian countries which show that “losses to GDP [Gross Domestic Product] from various components of undernutrition can be as high as 3 percent of national income.” (Haddad).

This problem is furthered by diet related diseases such as diabetes and cardiovascular disease which decreases GDP by an estimated 2.4 percent. China has estimated childhood malnutrition to be the cause of one-third of all diabetes and one-tenth of heart disease and stroke (Haddad). The economy is in a depression in the United States of America. Could nutritional health alone increase our GDP by five percent or more alone? Nutrition could hold the key to a generation with better health, productivity, and educational attainment. This concept is reiterated by “Political-Economic Perspectives on Human Biology” which points out that micronutrient deficiency, which is not as easily recognizable and may be the most common form of malnutrition in the United States, is associated with negative child function, such as deficits in weight, height, stature, and cognitive abilities (Goodman). Micronutrient deficiency may be so prevalent in the United States because, although there is ample quantity, the quality of nutritional value is degraded in processed, cooked, and modified foods. Processed foods comprise a large part of diets in many countries around the world.

Social action must be taken to find a solution to end poverty, malnutrition and

micronutrient deficiency. The effects of these big three have roots in many social and economic problems, as well as ethical boundaries for many people. But the ethics of the individual have already been incorporated into the ethics of convention. Most recently in the 1989 Convention on the Rights of the Child enshrined the right to good nutrition (Haddad). But have these notions been successful? Some suggest community based nutritional programs can effectively spread nutritional awareness, yet the prevalence of this paradigm shift has yet to be seen. There is little emphasis on good nutrition, and even less on the dangers of processed foods. The United States is losing ground in mental, physical, and socioeconomic health; nutrition could be playing a bigger role than most people think. The effects of our disregard for nutritional health will accumulate generation by generation, only causing worse and longer lasting societal problems. In fact, micronutrient deficiency or undernourishment during the early years of development are more likely to become obese later in their life, and experience issues with their cardiovascular systems. Many of these problems are attribute to rapid westernization which is thought to be the cause of an increased use of sugar and saturated fat, as well as leading a sedentary lifestyle. This westernization can be seen in peoples around the world (Eversole).

Although the effects of this poor nutrition are not blatantly obvious to observe, they have profound consequences. Nearly fifty percent of older people in the United States have a diet related chronic diseases such as heart disease, diabetes, arthritis and hypertension. In the United States heart disease is responsible for 32.4% of deaths. These diet related diseases are in part responsible for soaring healthcare costs. Older

people need to get proper nutrition in order to decrease their burden on the economy. Although the elderly only consist of sixteen percent of the United Kingdom's population, over thirty-three percent of health care costs can be attributed to them. Another problem many older people face is bone weakening, which is much more likely to be averted with a lifelong dedication to good nutritional health. Maintaining a diet rich in processed foods in your life will likely result in a dietary intervention, so get used to eating healthy now (Mathers). The healthcare and economic burden of the elderly is a real problem, with the average age increasing continuously, and the number of retired elderly dependents outnumbering the number of people in the workforce, it is integral that we put more emphasis on nutrition to ease the burden on healthcare and economics and increase the health of our retiring generations.

Many solutions have been proposed to reduce the rate of malnutrition, and many have been moderately successful as long as they focused on one particular component of malnutrition. Yet malnutrition is still a global problem. According to statistics, reducing the poverty rate is the single best way to reduce the prevalence of malnutrition. There are countless charities contributing to a solution to both poverty and malnutrition, yet there are underlying societal issues that prevent an adequate and global solution. These issues span from social to political struggles.

Proposing a global government, in a socialistic society seems like a utopian fairytale, yet have we not reached the age in time where technology has integrated us into a global network? Why not, then, allow all the worlds wealth to go toward a common purpose of bettering the world that we live in, instead of building weapons to

protect us from our own neighbors. A stark reality for the fate of humankind awaits if we do not get our society on track toward a brighter future. Nutrition has profound effects on society and physiology, and it is our generations duty to ensure that global issues are fixed. Nutrition is one of the most basic, but vital global issues.

Nutrition is an integral part of our lives from before birth, until the day we die. Yet our society has succumb to convenience when it comes to eating, yet the processes we employ to have this convenience not only contaminates our food with unnatural chemicals, but also strips food of the most integral micronutrients necessary for our most basic bodily functions. Nutrition is vitally undercut by society and under regulated by government entities. This malnutrition in our diets decreases the Gross Domestic Product produced in countries, propagating the social and economic problems currently plaguing the world, and putting more people in poverty. Poverty continues to propagate the vastly underestimated correlation between nutrition and problems in childhood function and development. Poverty and undernutrition must be stopped in order to keep society from degrading mentally and socioeconomically. Our societies view on nutrition is creating acute and chronic societal issues.

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Thompson, Derek. "Get Rich, Live Longer: The Ultimate Consequence of Income Inequality." *The Atlantic* 18 Apr. 2014: n. pag. Web.

<<http://www.theatlantic.com/business/archive/2014/04/more-money-more-life-the-depressing-reality-of-inequality-in-america/360895/>>.

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<www.cwidaho.ebib.com.cwi.idm.oclc.org/patron/FullRecord.aspx?p=332937>.

This book brings together two key concerns - the urgent need for poverty reduction and the situation of indigenous peoples in both developing and industrialized countries. I did not end up using this source insofar in my paper.

Goodman, Alan H.. *Building a new biocultural synthesis political-economic perspectives on*

human biology. Ann Arbor: University of Michigan Press, 1998. Web.

<http://books.google.com/books?hl=en&lr=&id=T8ZhpG_B_6MC&oi=fnd&pg=PA339&dq=Poverty+and+nutrition&ots=qoSIn0uiTf&sig=2K3MJZyGRN8ong-G92sa98QNEiw#v=onepage&q=Poverty%20and%20nutrition&f=false>.

This paper talks about global unity, and redefining the foods we ingest. This paper correlates poor diets with health defects around the world, in places like Mexico and Kentucky, and how micronutrient deficiency affects cognitive development in children, which translates into a less productive and mentally acute generation.

Haddad, Lawrence. "Nutrition and Poverty." *A Foundation for Development* 8 (): n. pag.

Web. <<http://bvs.per.paho.org/texcom/nutricion/intnut8.pdf>>.

This scholarly reviewed article shows the economic burden of undernutrition and malnutrition in very poor countries, and GDP loss from the same. It is a persuasive article, calling for public action.

"Life expectancy at birth, total (years)." *Life Expectancy at Birth*. The World Bank, 1 Jan. 2014. Web. 26 Apr. 2014.

<<http://data.worldbank.org/indicator/SP.DYN.LE00.IN>>.

This comprehensive data shows the life expectancy by country, which I need to compare Chad and the Netherlands life expectancy.

Mathers, John C.. *Healthy aging: the role of nutrition and lifestyle : the report of a British Nutrition Foundation task force*. Chichester, U.K.: Published by Wiley-Blackwell for the British Nutrition Foundation, 2009. Web.

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This scholarly reviewed book reviews how telomeres length is a controlled cell division iterator used to prevent cancer. It reviews how this telomeres length relates to aging, and how nutrition is related to this telomere length and aging.

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and 2015 to combat global malnutrition, poverty, and hunger.

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<<http://www.nydailynews.com/life-style/health/healthiest-country-world-article-1.1582013>>.

This article overviews a study, revealing which country has the least healthy food choices in the world, and the country with the healthiest food choices in the world.

Thompson, Derek. "Get Rich, Live Longer: The Ultimate Consequence of Income Inequality." *The Atlantic* 18 Apr. 2014: n. pag. Web.

<<http://www.theatlantic.com/business/archive/2014/04/more-money-more-life-the-depressing-reality-of-inequality-in-america/360895/>>.

This newspaper articles correlates the richest and the poorest with their average life expectancy. The data shows a clear trend that poverty is a negative factor in longevity and quality of life. I will be using this information and the graph.