

Feeding and Healing the Family of Man – the Role of Nutritional Supplements

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ABSTRACT

The Family of Man was a 1955 photographic exhibition that depicted normal people in all walks of life from around the world. The viewer was visually confronted with the similarity of all people. The people of the world are now facing common health challenges as a result of changing lifestyles and increasing healthcare costs. Dietary supplements have the potential to be part of the solution. Dietary supplementation with antioxidant vitamins may be the most effective intervention for preventing the onset of Alzheimer's disease in the rapidly expanding elderly population—and at a very low cost. AIDS is devastating much of the developing world, where few resources are available to treat its victims. Inexpensive multivitamin supplements have been demonstrated to slow the progression of AIDS, reduce the death rate, reduce AIDS-related morbidity, improve T cell counts, and reduce viral loads. Careful economic analysis demonstrates that calcium and folic acid supplementation could reduce healthcare costs in the USA by \$13.9 billion and \$1.3 billion, respectively. Most supplements with therapeutic potential have not been subjected to sufficiently rigorous research to permit unqualified public health recommendations. Carefully directed research is needed to identify the supplements with the greatest potential and to verify their safety and efficacy.

INTRODUCTION

The Family of Man

The Museum of Modern Art in New York City hosted a photographic exhibit of mostly ordinary people from around the world in 1955. This exhibit, *The Family of Man*, was unprecedented in its depiction of varied races and ethnicities in a way that displayed the similarities and oneness of all people. When the exhibit was published as a book, the American poet/philosopher Carl Sandburg wrote in the prologue:

The first cry of a newborn baby in Chicago or Zamboango, in Amsterdam or Rangoon, has the same pitch and key, each saying, "I am! I have come through! I belong! I am a member of the Family." Carl Sandburg (1)

Indeed each child that enters the world is a part of the Family and his or her fate is inexorably intertwined with the welfare of all humanity. Modern science appears to be confirming the oneness of humanity by elucidating the genetic similarities between races. The validity of using race or ethnicity as a criteria in selecting or describing human subjects has recently been questioned in the medical and scientific communities (2). An editorial in the *New England Journal of Medicine* declared that: "race is biologically meaningless" and further stated that "instruction in medical genetics should emphasize the fallacy of race as a scientific concept and the dangers inherent in practicing race-based medicine" (3). This sentiment was echoed by Wilson et al. (4) in a study of

genetic differences in drug response when they concluded: “commonly used ethnic labels are both insufficient and inaccurate representations of inferred genetic clusters”. These sentiments are not, however, shared by all scientists. In the first paper cited on this topic the authors concluded that “Ignoring our differences, even with the best of intentions, will ultimately lead to the disserve of those who are in the minority” (2). Although the debate continues, it is clear that traits uniting humanity are far greater than the differences. Research that applies to one ethnic group almost always applies equally to all people.

Healthcare crisis

Healthcare costs have risen to epic proportions in much of the world, and is seriously impacting the entire Family of Man. Much of the developing world is being ravaged by AIDS, and it is ill prepared to treat or even slow the onslaught of this terrible disease. This disturbing trend obvious in the developed world especially in the United States, where healthcare costs have risen from 6% of GDP in 1965 to 15% of GDP in 2003 (4), and the U.S. government estimates that it will continue to increase to approximately 18.5% of GDP by 2013 (4). Healthcare costs for 2003 was \$1.5 trillion (\$15,000,000,000,000), only 6 countries in the world have a total national GDP higher than the amount that Americans spend on healthcare (5). With the rapid expansion of healthcare costs, it is far exceeding the increase in wages of Americans, by approximately four-fold, as shown if Fig. 1 (6). How is the Family of Man in America being affected? Currently 44 million Americans have no health insurance coverage and little access to health care. That is approximately 1 in 5 Americans! In a Perspective in the October 14, 2004 New England Journal of Medicine Paul Ginsburg concluded: “We can only hope that whoever is elected president will move beyond campaign-trail rhetoric and provide the leadership needed for a candid national discussion about health care costs. If not, we will find ourselves on a downward spiral, as more and more resources are used to pay for the health of fewer and fewer Americans—a potentially intolerable situation.” (7)

Health in America

If spending money on healthcare was enough to assure optimal health, Americans would be the healthiest

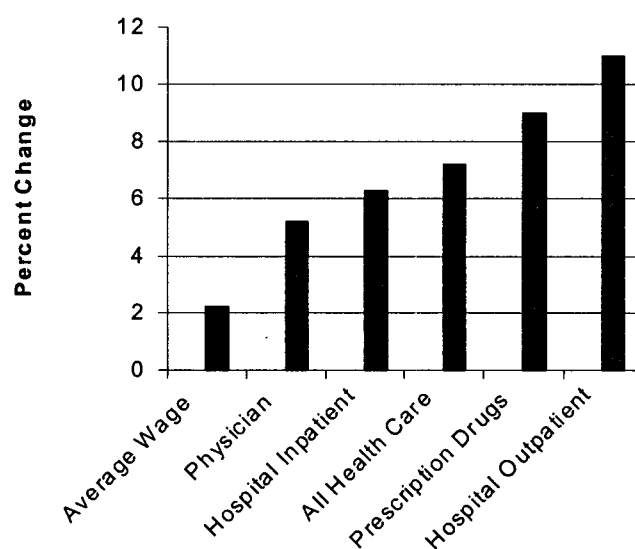


Fig. 1. Increases in per capita hourly wages and healthcare costs in the United States for year 2003. Data taken from: Ginsburg. 2004 Controlling Health Care Costs N Eng Med. 351: 1591-1593.

people in the world. That is not the case, however. Americans are reporting more “unhealthy days per month”. In a state by state study by the Centers for Disease Control (CDC) (8,9) respondents in only 3 states reported more than 6 sick days per month in the 1993~1995 period, but that increased to 13 states in the 1999~2001 period during a period of rapidly increasing healthcare expenditures.

The USA is not leading the world in health statistics either. Two methods of evaluating the effectiveness of healthcare in a country is the life expectancy of the population and the infant mortality rate. Life expectancies for American men and women rank 42 and 43 in the world, respectively; the infant mortality rate is 39th best (10). However, there is good reason to be concerned about the health of people in most of the world. Obesity is linked to many of the diseases that increasingly afflict the “Family of Man” and is recognized by the World Health Organization to be a global epidemic (11). Obesity is the direct cause the epidemic of type 2 diabetes, which in turn is causing increases in cardiovascular disease, renal failure and many other disease states (12-14).

The good news is that the trends can be reversed. Not by increasing healthcare spending, healthcare expenditures appears to have little impact on health, but by improved lifestyle choices and better nutrition. Of the 10 leading causes of death in the United States (Table 2) (15) at least 6 are strongly related to nutrition and other lifestyle factors. Nutrition scientists and professionals are at “ground zero” for the escalating global health crisis. How we do our jobs will impact the health and economic wellbeing of billions of people. It is a great challenge and responsibility that must be taken very seriously. Ultimately, improving diets will involve improving the food choices of people as well as highly directed nutritional interventions such as food fortification and nutritional supplementation. Dietary supplements have the potential to intervene in the development and progression of disease and has the potential to reduce morbidity and mortality as well as to reduce overall health expenditures.

DIETARY SUPPLEMENTS

Alzheimer’s disease

The argument could be made that pharmaceuticals are proven to be effective whereas nutritional supplements are used for health improvement with little or no scientific support. There is ample reason, however, to questions

Table 1. Life Expectancy and Infant Mortality in Selected Countries

Country	Male Life Expectancy (rank)	Female Life Expectancy (rank)	Infant Mortality (rank)
Japan	77.51 (5)	84.5 (4)	3.91 (5)
Iceland	77.19 (6)	81.77 (21)	3.59 (2)
Singapore	77.1 (7)	82.23 (5)	3.65 (3)
Sweden	76.95 (8)	82.37 (16)	3.40 (1)
Switzerland	76.73 (11)	82.63 (11)	4.53 (11)
Israel	76.57 (13)	80.67 (33)	7.90 (46)
Canada	76.02 (17)	83.0 (6)	5.08 (21)
Greece	75.89 (18)	81.16 (27)	6.51 (36)
Italy	75.85 (19)	82.41 (15)	5.92 (30)
Netherlands	75.4 (24)	81.28 (24)	4.42 (8)
UK	74.97 (30)	80.49 (36)	5.63 (25)
New Zealand	74.85 (36)	80.93 (31)	6.39 (35)
Germany	74.3 (41)	80.75 (32)	4.77 (15)
United States	74.24 (42)	79.9 (43)	6.82 (39)

Data for year 2000. Source: www.os-connect.com/pop/ Compiled from the U.S. Bureau of the Census, International Data Base and C.I.A. World Fact Book.

Table 2. Leading Causes of Death in the United States of America

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1. Heart Disease
 2. Cancer
 3. Stroke
 4. Chronic Lower Respiratory Disease
 5. Accidents
 6. Diabetes
 7. Pneumonia/Flu
 8. Alzheimer's Disease
 9. Kidney Disease
 10. Suicide
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both assertions, at least in some instances. The June 26, 2004 issue of *The Lancet* published the first study of the Alzheimer's disease drug, donepezil, not performed by a pharmaceutical company and found: "No significant benefits were seen with donepezil compared with placebo in institutionalization (42% vs 44% at 3 years; $p=0.4$) or progression of disability (58% vs 59% at 3 years; $p=0.4$)" (16). There were no benefits of any kind from using donepezil. Nevertheless it is a commonly prescribed therapy for Alzheimer's disease and is not inexpensive (28 5 mg tablets are \$149.00 at CanadaPharmacy.com). In contrast, the Cache County Study in Utah found that supplementation of vitamins E and C (500 mg and 400 IU) resulted in a 73% decrease in the occurrence of Alzheimer's disease (17). Whereas the study did not demonstrate a role of vitamins E and C in the treatment of Alzheimer's disease, it did demonstrate efficacy for the vitamins in preventing the disease in the first place.

Multivitamins

Something as simple as a multivitamin supplement may have major health benefits. A Swedish study of 1296 survivors of myocardial infarction and 1685 controls found that, after adjusting for all other known risk factors, the risk of recurrence of myocardial infarction was 0.79 for men and 0.66 for women (18). The authors suggested that if their findings were "confirmed by randomized, double-blind and placebo controlled trials, then multivitamin therapy may provide a cheap, safe and acceptable therapeutic option for the primary prevention of CVD" (cardiovascular disease). It is likely that the effect of multivitamins on cardiovascular disease is primarily due to the vitamin B-12 and folic acid, which have been demonstrated to reduce both cardiovascular (19,20) and peripheral artery disease (21). These studies with B vitamins suggested that the optimal doses of folate and B12 may be higher than what is found in most multivitamin supplements, suggesting that most multivitamins may need to be reformulated for optimal dosages. These studies demonstrate that multivitamins and/or B vitamin supplements are efficacious for both preventing cardiovascular disease and for intervening in the recurrence of the disease.

AIDS

AIDS is an especially insidious disease that preys on the members of the "Family" that are least able to take care of themselves. A recent study of HIV positive women in Tanzania evaluated the effects of daily supplementation with a multivitamin (B vitamins, and vitamin C and E) with or without vitamin A or vitamin A alone (22). Progression to stage 4 AIDS and death were both significantly reduced in subjects taking the multivitamin supplements with or without vitamin A. Death occurred in 67 of 271 women taking supplements and in 83 of those 267 taking placebo. The occurrence of many pathologies associated with AIDS such as thrush, oral ulcers, nausea etc. were reduced by more than half. Perhaps most impressive were the increases in CD4+ and CD8+ T cells, and reduced viral loads in the patients receiving multivitamins. In a letter to the editor, Schroecksadel pointed

out that the improvements seen from supplementation in the African AIDS patients may be due a reduction to pathologies related to destruction of vitamins in AIDS patients (23). Whether multivitamin supplements treats AIDS or blocks the harmful effects of AIDS is of little consequence. AIDS is always fatal, any intervention that can slow the progress and reduce morbidity associated with AIDS is valuable, especially in areas where AIDS afflicts poverty stricken populations with little access to AIDS drugs.

Supplements and healthcare costs

The Lewin Group, a highly respected research organization uniquely qualified to evaluate policy issues from scientific and economic perspectives, was commissioned to conduct a study of 5 nutritional supplements: calcium (with vitamin D), folic acid, omega-3 fatty acids, glucosamine, and saw palmetto (24). The report concluded that if the over age-65 population took 1200 mg of calcium with vitamin D, approximately 743,000 hip fractures could be avoided. Using a Congressional Budget Office accounting methodology, they concluded that net healthcare saving over a 5 year period would be approximately \$13.9 billion.

The total lifetime cost incurred by a baby born with neural tube defect is currently estimated as \$532,000 in direct medical costs, therapies, and equipment. The Lewin Group estimated that if just 10.5 million additional women took folic acid periconceptionally, approximately 600 babies would be born without neural tube defects each year. Net savings were calculated at \$321,853,000 per year and about \$1.3 billion over 5 years.

The other 3 supplements were considered to not have sufficient data to project cost saving at this time, however, the study found all three to be very promising and worthy of carefully directed study.

CONCLUSIONS

Great strides have been made in medical technologies, but the gains are largely being offset by unhealthy lifestyles. The new technologies come at a high economic price and the increased cost make medical care of any kind unavailable to increasing numbers of people. However, improved lifestyles and better nutrition have the potential to reduce health care costs and improve the health of the Family of Man. Nutritional supplementation is one nutritional intervention that may be utilized for improving public health. There is a considerable body of evidence supporting the use of nutritional supplements as preventive or therapeutic agents. Unfortunately, most of the research is incomplete or lacking sufficient safety data to permit unqualified recommendations to the public. Nutritional supplements are very inexpensive compared to pharmaceutical products and are generally safe. There is an urgent need to identify which nutritional supplements have the greatest potential to be safe and effective for the prevention and treatment of disease, and to identify the research gaps so that future studies can be directed toward finding solutions for Feeding and Healing the Family of Man.

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