Changes for the Better; Why is it so Difficult?

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Abstract

Changing medical thinking and practices require an open mind, new thoughts, and abundant patience as the process may take up to 20 years. At least 60% of adults have 1 or more chronic diseases (CD's). Four CD's; cardiovascular, cancer, diabetes, and obesity account for 70% of all deaths. The U.S. funds much of the worlds health expenditures while ranking last in health care amongst similar industrial nations. The main cause of CD is a faulty lifestyle which includes smoking, alcohol, insufficient exercise, and an unhealthy diet of red meat, animal protein, and processed foods, which cause chronic inflammation. A healthy lifestyle includes a healthy diet, exercise, sleep and reduced stress. A healthy diet is prime and is based on Whole Foods and is Plant Based. A whole food plant-based diet (WFPBD) includes fruits, vegetables, seeds and nuts.

Adopting a WFPBD would significantly reduce greenhouse gas emissions and extend the natural lives of 72 - 80 billion land animals and replenish the seas of aquatic life. It would reduce health care expenditures, extend all lives and improve climate and planetary health.

Keywords: Chronic Diseases (CD's); Whole Food Plant-Based Diet (WFPBD)

Introduction

Awareness of the need to change behavior, habits and traditions requires an open mind, introspection, and patience. The interval from awareness to change may be difficult, long, but worthwhile. In medicine this interval may be at least 17 - 20 years. One reason for the long delay is the divide between clinical and evidence-based medicine. Clinicians are attuned to anecdotal and personal experience, tradition, input and approval from colleagues, and are slow to accept change, while evidence-based medicine reviews data; and from it makes projections about disease behavior [1-3]. The increase in a unhealthy lifestyle, and chronic disease (CD) (cardio-vascular, strokes, cancer, diabetes, obesity, and lung and renal disease) is now a worldwide pandemic due to a Western lifestyle, its processed foods and red meat. Longevity is increasing everywhere except the USA where lt has declined in each of the last few years. Our climate and oceans are in peril but our response is torpid. While Covid deflected attention from CD, it was not a culprit in this emerging pandemic [4-6].

The numbers

Worldwide and planetary health is declining [7-9]. The U.S. funds or implements much of global health expenditures ($13 billion/year). The highest rated health care systems are Denmark, Austria, Sweden, Canada, United Kingdom, South Korea and Taiwan [10-14]. The U.S. ranks 37th ahead of Slovenia, Cuba and Brunei; is last in health outcomes, and in 9 of its 10 determinants; including administrative efficiency, billing and payments, infant mortality, and life expectancy at age 60 [5,10-15]. Of 7 major industrial nations the US is last in health care. The US spent $12,914 per capita on health care in 2021, far more than any other country, but lags behind in quality, efficiency,

access, and equity [16,17]. The US is the only major country without universal health care. Pediatricians report an alarming increase in anxiety, depression and suicide in US youth. Between 2015 - 2020 emergency mental health visits increased by 43%, while all other visits combined increased by 1.5% [18].

Equally alarming are the prevalent human silhouettes; wider profiles, waist lines, and obesity. Globally more than 1 billion are obese or overweight. The greatest increase is in those under 40. If unchecked by 2032, worldwide obesity rates will double the 2016 values and account for 8.1% of all health expenditures [19].

An Oxford study projected that global adoption of a plant strong diet would save 8 million lives annually, decrease greenhouse gas emissions by 2/3, and reduce climate costs by $1.5 trillion [20]. Diets high in red and processed meats are the greatest harm to health. Following world dietary guidelines would prevent 5 million deaths annually. A vegetarian diet could save $7.3 million; and a vegan diet $8.1 million annually. Half would be due to the elimination of red meat and half from better nutrition and the fewer calories derived from plant-based foods. The projected change would add billions of surviving land animals, decrease health care costs and lost working days. The changes would reduce greenhouse gas emissions by 50% and maintain a safe global climate. Annual health care savings would be $700 billion to $1 trillion [20]. Another Oxford study projected how much food-related climate emissions would be reduced by 3 different diets. Adopting global dietary guidelines would reduce emissions by 29%; and a vegetarian and vegan diet would reduce it by 63% and 70%. Combined, the 3 would save 8 million lives [21].

Seventy-two to eighty billion land animals are slaughtered annually worldwide (200 million/day). Most provide food, some provide pelts, and the remainder are sick, or surplus breeding stock. In the US, more than 20 million cows and 8 billion chickens become food, and 305 million hens provide eggs. The world consumes 200 million tons of fish and seafood annually and an additional 50 million tons rot or are wasted. In 2020 the US estimated 200 million recreational fishing trips caught 1 billion fish, of which 85% were released. In 2020, commercial fisheries landed 8.4 billion pounds of seafood, valued at $4.7 billion dollars [22-25].

The evidence

Sixty percent of adults have one chronic disease (CD), and 40 percent have 2 or more [4]. Chronic diseases are insidious, often begin in childhood and take decades until symptomatic. Chronic inflammation is not infectious, but nutrient related and the inciting factor of CD [4]. CD may seem contagious since it affects so many. Four chronic diseases account for 70 - 80% of deaths in the world. They are cardiovascular (including strokes), cancer, diabetes, and obesity [6,26]. In China, chronic lung disease replaces obesity [27]. The four inciting factors of CD are, smoking, alcohol, a poor diet, and insufficient exercise [28]. Beginning at age 50, eliminating smoking and alcohol, eating healthy, and maintaining normal weight and exercise could add 12 (male) and 14 (female) years to lifespan.

The evidence supporting a "Whole Food Plant Based Diet" (WFPBD) is strong, and derived from population studies, interventional studies, and basic or clinical research. A Whole Food Plant Based Diet and healthy lifestyle (diet, exercise, stress reduction, sleep time) are optimal for a longer, healthier life, and help reduce hypertension, cancer and cognitive disorders [27-29]. The largest US study, the 1995-1996 NIH-AARP study, is a six state, two city (Detroit and Atlanta) study of American Association of Retired People (AARP) members [27]. It involved 576,000 participants aged 50 - 71 years. A healthy lifestyle, even in recent smokers, lowers death from all causes. A greater consumption of plant but not animal protein lowers overall and cardiovascular mortality. Exercise lowers the death rate of 13 cancers, as does being active, not sedentary. Exercise (I hour/day) favorably impacts colon (30 - 40%) and breast (20-30%) cancer [29,30].

In China a similar study followed 512,714 citizens aged 30 - 79 for 10 years. Exclusion factors were heart disease, stroke, chronic obstructive pulmonary disease, cancer and an undetermined body mass index, leaving 497,198 to follow. Lifestyle factors evaluated were smoking, alcohol, physical activity, diet and body shape. Over 90% had 2 - 4 healthy lifestyle factors, but only 2.1% had all 5 factors. The

conclusions were: the greater the number of individual and total factors, the lower all cause and cause-specific mortality. Adhering to a healthy lifestyle substantially reduced cardiovascular and respiratory disease and cancer. Nearly 40% of total deaths were preventable. Lifestyle interventions have much to offer and are a better, less costly approach to chronic illness [27].

The microbiome

The above observations and associations do not explain how lifestyle factors affect health. The microbiome is the important missing link. The term microbiome refers to the collected genomes of micro-organisms in a specific environment, and the term microbiota, or microflora refer to the micro-organisms themselves. The gut microflora are 90% bacteria and 10% fungi, viruses, archaea and protozoa. They are found throughout the gut but mainly in the appendix, cecum and colon. They eluded identity and culture until the last 15 years. DNA sequencing separated human and bacterial cells and identified specific microfloral species. Early studies in the 1970's estimated the microbiome outnumbered human cells tenfold (100 vs. 10 trillion) and there were 2.4 million microbiome genes and 24,000 human genes. The current cell and genome count varies widely. Humans have from 10 - 30 trillion cells, and the microbiota 38 - 90 trillion. The human genome has 22,000 protein encoding genes, and the microbiome 2.5 - 8 million genes, or 100 - 360 times greater than the human genome [31-33]. The microbiome ls considered a virtual organ [34,35]. A healthy colonic microflora does a myriad of functions including fermentation of non-digestible substrates, like fiber and intestinal mucus. Fiber is found only in plants. There is no fiber in meat. 97% of the U.S. population is fiber deficient. Fiber is not digested until it reaches the colon where fermentation allows specific microbes to digest fiber and mucus and produce 3 short chain fatty acids, acetate, propionate and butyrate. Each function separately and collectively. Acetate is the most abundant SCFA and; is a metabolite for growth of other bacteria; assists in appetite control, and in peripheral tissues is involved in cholesterol metabolism and lipogenesis. Propionate is transported to the liver and regulates glucose formation and interacts with fatty receptors to regulate satiety. Butyrate is the main source of energy for colonic epithelial cells and; is involved in intestinal glucose synthesis; is vital for oxygen consumption by gut epithelial cells; and maintains oxygen balance in the gut to prevent dysbiosis. High SCFA levels correlate with lower rates of obesity. The gut bacteria influence obesity through dysbiosis, and bacterial diversity. Low diversity has been noted in inflammatory bowel disease, type 1 and 2 diabetes, celiac disease, arterial stiffness and psoriatic arthritis.

Chronic inflammation induces arterial injury and plaque formation. Colonic bacteria ferment choline, betaine, lecithin and carnitine which are abundant in red meat, beef, pork, eggs, lamb, and saltwater fish. They are fermented into trimethylamine (TMA) which is transported to the liver and converted to trimethylamine N-oxide (TMAO). TMAO directly causes atherosclerosis. High levels of TMAO double the risk of heart attack, stroke, and other cardiovascular diseases [36,37]. Omnivores produce significantly more TMAO than vegans or vegetarians from the same food. What we eat determines the gut microflora. Eating meat regularly creates a bowel lumen full of bacteria that convert TMAO precursors into TMAO. Plant based bacteria don't eat or survive on animal protein. Plant proteins have bacteria that release nitrous oxide, which dilate arteries and increase blood flow. A multi-center study of TMAO levels in 530 patients with acute chest pain affirmed those with the highest levels of TMAO were six times more likely to die, have an infarct or stroke, or need surgery within 1 month. They were six times more likely to die or have a myocardial infarct in the next 6 months, and were twice as likely to die in the next 7 years compared to those with the lowest TMAO levels [38]. High TMAO levels also correlate with severity of peripheral arterial disease [39]. A 2020 meta-analysis from 7 papers, 9 cohort studies, and 10,301 patients concluded that elevated TMAO levels increase the risk of major cardiovascular events by 58% [40]. Elevated TMAO is associated with T2 diabetes, liver and kidney disease, and cancer [36].

The microbiome help form serotonin, dopamine, noradrenaline, glutamate and synthesize thiamine, folate, biotin, riboflavin, pantothenic acid, and up to half of the daily vitamin K requirement. Vitamin B12 is made and utilized by gut microflora [41-43]. When planning dinner, remember to include the microbiome since 2 are always eating!

The reticent omnivore

Noncommunicable chronic diseases (NCD), once considered "Western", are now global; one of our least desirable exports, unhealthy, and prevalent nearly everywhere. Many wisely adopt a Whole Food Plant Based Diet" (WFPBD) after surviving a serious health event,

usually cardiac, since it is both the most common CD, and the leading cause of death. Annually in the US there are 800,000 heart attacks, which is a first event in 600,000. At least 12% (96,000) do not survive the acute episode. Heart disease is the leading cause of death in the world. About 20 million adults have coronary artery disease (7.2%). In 2020 nearly 700,000 people died from heart disease [44,45]. It is difficult to understand why a healthy lifestyle is not universal. Since heart attacks can kill, they are best prevented. The treatment to prevent also stabilizes and reverses plaque formation and coronary disease [46].

For many, CD is attributed or blamed on family, or ancestral genes, particularly if other relatives had similar illness. At most, 20% of CD are genetically influenced. Genes must be upstaged to act. The common cause of gene activation is a poor lifestyle which itself causes 80 - 90% of CD. Most generational illness is lifestyle induced, and not genetic [47]. Identical twins, geographically separated, develop illness reflective of lifestyle, not their genes [48]. Immigrants to the US contract illnesses prevalent in the US, not their native country [49].

There are multiple reasons why a healthy lifestyle is slow to impact the Western lifestyle:

1. The food and dairy industry is wealthy, powerful and promote processed foods high in cholesterol, salt, sugar, and saturated fat. Packaged food is processed with abundant salt and sugar and readily available, and creates the impression that the planet is a candy store. The shelf life of packaged food is much longer than fruit or vegetables. Packaged food is colorful and has popular brand names and logos. There is no name brand for broccoli, Brussels sprouts or beets. Entertaining, inaccurate marketing, commercials, ads, and billboard displays are appealing and popular. We do not begrudge the food industry, as their purpose is to create wealth, not health, which they do well [50]. Product change is dictated by sales and public taste. Unlike the tobacco and liquor industry, there are few restraints on the food industry [51].

2. Physicians are taught little about a healthy lifestyle. It is taught in about ¼ of medical schools, less in residency programs, and is absent in most practices [52]. Many zealous lifestyle advocates are more knowledgeable than their physicians, who neither practice, study, preach or teach lifestyle [53]. When ill, we seek a quick solution. This works well for acute illness, whose onset is abrupt and resolves in days, weeks or months by a pill, operation, or time. The harms of an unhealthy lifestyle are insidious and appear decades later, when the body defenses cannot keep the inflammatory process or disease in check. Patients often have unrealistic expectations of health screens and deflect blame when noncompliant to lifestyle recommendations [54].

3. The Whole Food Plant Based movement is gaining followers and momentum. The evidence is on shelves and freezers. Oat, almond and soy milk, plant burgers, vegan cheese, "vegan cakes" are not a serendipitous event. While most are not healthy, they are a step in the right direction, and a concession to the advocates of a healthier lifestyle.

4. A recent TED talk emphasized the need to emphasize and present the positive, not the negative. We are more responsive and attuned to hearing something is 70% effective than 30% ineffective. Rather than criticize a popular but unhealthy lifestyle, emphasize the benefits of a healthier one. The shortcomings of the unmentioned become apparent. This is a needed lesson for many elected political leaders who decry opponents rather than put forth platforms or solutions to problems [55].

5. We have defined and addressed a healthy lifestyle, emphasizing its nutritional aspects. Nutrition and diet are the most contentious and the least followed components. Few argue or find fault with the guidelines for exercise (30 min. - 1 hr. daily), sleep (7 - 8 hours), and quiet time (20 - 40 min./week). That explains our emphasis on nutrition.

Change for the better - Why is it so difficult?

This paper questions why it is difficult to change to a better and healthier lifestyle. Abundant evidence confirms a WFPBD prevents, reverses and decreases chronic disease and its mortality. Processed foods are popular because of cost, taste, shelf life, and advertisements. These displace health concerns. Lifestyle and food choices are individual and voluntary. Change to a better lifestyle is often advised and acknowledged, but too often defy compliance. Counseling individuals about a healthy lifestyle through daylong, weekend or week-long

seminars help many but chronic disease flourishes and increase annually. A larger, successful and unique model was a 25 year Finnish study which could be more widely adopted.

North Karelia, Finland

In 1952, North Karelia, a Northeastern Finnish County with a population of 170,000 had the highest death rate of 35 - 50 year-old men from heart attacks in the world. So common were cardiac deaths that help from the government was sought. After World War 2 returning soldiers were given parcels of land as partial compensation for military service. Many were lumberjacks before the war, whose meals were hunted game, fish, and in late summer wild berries. Having no farming experience, they cleared the land and raised pigs, cattle and poultry which coupled with their war acquired smoking habit and love of salt, accelerated coronary disease. By 1952 Karelian men were 30 times more likely to die of heart attacks than men from Crete, and were on average 10 years younger.

The assigned help to North Karelia was a young public health physician Pekka Puska. His unique approach lowered cardiac mortality by nearly 73% over the study period of 20 years, and similar results were noted in other communities who adopted the programs he developed. Puska was influenced by an open and disruptive minded British epidemiologist Geoffrey Rose whose data showed; it was cheaper and better to prevent disease then cure it; that hospitals and doctors could no more resolve ill health than famine relief could resolve world hunger.; that the number of people who died of heart disease were directly proportionate to the average blood pressure of the entire population; and lowering cholesterol levels 1% would decrease heart disease by 2%.

Puska and his young associates approached and enlisted help from the "Marthas" a women's organization and after emphasizing the association between meat, butter, salt and heart attacks, home meals changed by substituting some vegetables for salted pork, and using less salt and butter. Brigades of lay ambassadors, mostly civic minded young women indoctrinated with the message to reduce consumption of animal products, salt, butter and cigarette use, directly influenced friends, communities and villages. His initial approach to industry was rebuffed but public interest had been aroused and led to the sausage industry substituting mushroom filler for pork, and using less salt and butter. Consumers noted no difference in taste and sales increased. He approached each issue with a positive solution rather than a direct, negative attack. Berries formerly a summer crop soon became year-round frozen fruit and available by coops and industry, and some pastureland was converted to grow berries. No smoking areas were developed as were programs to eliminate smoking and contests held between villages to sign the most potential non-smokers.

At 20 years smoking declined from 52 to 31%, life expectancy increased for men and women by 7 and 6 years, and the mortality rate for cardiac disease fell by 73%. Throughout the 20 years more villages and communities adopted and adapted the program with excellent results. Additional benefits included less cancer, fewer strokes, and a longer healthier life. Some criticized the "shotgun" approach, the simultaneous change of several factors rather than evaluating each individually; a clinical versus an evidence-based approach. The initial objectives were simple and met - to lower the incidence and deaths from heart attacks, and extend longevity, but not to analyze each determinant.

The skill set Puska and colleagues applied were much more than scientific, as they had to overcome deep rooted habits. Rather than attack the roots with science alone, he and colleagues used evidence, common sense and we can only believe, affable interpersonal skills that convinced wives, families, restaurants and food manufacturers that healthier foods were tasteful, popular and lowered mortality and together increased the consumer base!

The population approach applied in North Karelia has no geographic or disease boundary and has travelled and been successfully applied globally to combat T2 diabetes and other diseases [56-61].

Summary

Changing personal and professional habits takes an open mind, introspection, patience and time. In medicine. the lag can be 17 - 20 years. Outdated theories and practices continue beyond their expiration date. The worldwide pandemic of an unhealthy lifestyle, and a planet in peril, mandate change and intervention. The US strongly supports global health expenditures, but its own health care rankings are poor, longevity is declining and health care costs are the highest in the world.

Worldwide, the leading causes of death are chronic diseases, cardiovascular, cancer, diabetes, stroke and pulmonary disease. Four measures; no smoking, no alcohol, maintaining normal weight, and daily exercise would eliminate or diminish these illnesses by 80%. Adopting a Whole Food Plant Based Diet could limit or eliminate many of these diseases. Community directed lifestyle change has a greater impact than individual change and when is contagious and spreads to nearby and distant areas.

The role of the microflora, as a cause or solution to illness, depends on which bacteria are involved. The gut microflora helps prevent or propagate many illnesses. The thousands of bacterial species are either plant or animal eaters, and disease is either prevented (plants) or propagated (meat) by diet.

Most disease is lifestyle related. Genes and family history are involved at most 20%. Why there is not widespread adoption of a healthy lifestyle remains unclear. The most common worldwide disease is cardiovascular. Heart attacks have at least a 12% mortality rate. Since the first presentation of heart disease may be acute or fatal, and there are 800,00 heart attacks/year in the US serious thought to lifestyle change should be a priority. There is wisdom in the adage 'Eat to Live not Live to Eat".

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