

# Lifestyle as Medicine: The Case for a True Health Initiative

American Journal of Health Promotion  
2018, Vol. 32(6) 1452-1458  
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sagepub.com/journalsPermissions.nav  
DOI: 10.1177/0890117117705949  
journals.sagepub.com/home/ahp



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## Abstract

The power of lifestyle as medicine was perceived thousands of years ago. There is now consistent and compelling science to support the important influence of lifestyle on health. Approximately 80% of chronic disease and premature death could be prevented by not smoking, being physically active, and adhering to a healthful dietary pattern. Cardiovascular disease, diabetes, stroke, dementia, and cancer are all influenced by lifestyle choices. Despite the ample evidence about what behaviors promote health, confusion still prevails among the general population. This is particularly true with regard to diet. Confusing nutrition messages from scientists, the media, the food industry, and other sources have made it all but impossible for any single authority to convey persuasively the fundamentals of healthful eating. The case is made here that a global coalition of diverse experts has the power to do what no individual can: clarify and popularize an understanding of the fundamentals of a health-promoting, sustainable pattern of diet and lifestyle, and rally the general public to their consistent support.

## Keywords

nutrition, interventions, social media, awareness, strategies, culture change, opportunity, strategies, population health, interventions, education/communications, awareness, strategies

The power of lifestyle as medicine was espoused thousands of years ago by Hippocrates, who wrote, “If we could give every individual the right amount of nourishment and exercise, not too little and not too much, we would have found the safest way to health.”<sup>1</sup> Despite the technological, economic, and medical advances of the new millennium, and to some extent even because of them, the world is experiencing a marked increase of chronic diseases, including cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes. The World Health Organization (WHO) estimates that these 4 conditions represent 82% of noncommunicable diseases, leading to 38 million deaths each year—more deaths than all other causes combined.<sup>2</sup> There is now consistent and compelling science to support what Hippocrates intuited.

In a seminal article published in the *Journal of the American Medical Association* in 1993, McGinnis and Foege described the root causes of the diseases that were considered the leading causes of death in the United States. This cogent study, itself presaged by prior literature on the same topic,<sup>3-7</sup> revealed that tobacco use, diet/physical activity patterns, and alcohol were the actual leading causes of death, accounting for approximately 80% of premature deaths.<sup>8</sup> Eleven years later, Mokdad and colleagues reexamined the same terrain, producing very similar results.<sup>9</sup> Smoking, physical inactivity, and poor dietary habits were again found to be the primary drivers of disease and premature death in the United States.

Studies conducted worldwide have consistently shown that key lifestyle choices have a profound impact on health. Ford and colleagues estimated that approximately 80% of chronic diseases could be prevented by 4 healthy lifestyle factors in a study in Potsdam, Germany. These factors were never smoking, maintaining a body mass index (BMI) lower than 30, being physically active for greater than 3.5 hours per week, and adhering to a healthy diet consisting of high intake of fruits, vegetables, whole-grain bread, and low meat consumption.<sup>10</sup> In the United Kingdom, Kvaavik and colleagues published a study examining the effect that physical inactivity (<2 hours per week), low fruit and vegetable consumption (<3 consumed per

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day), smoking, and excess weekly alcohol consumption had on all-cause mortality. They found that the mortality risk of having all 4 poor health behaviors compared to having none was equivalent to an increase in chronological age of 12 years.<sup>11</sup> They concluded that modest, sustained improvements to lifestyle behaviors could have considerable impact at both the individual and population level and were important public health priorities.

In 2012, Matheson and colleagues assessed healthy habits in normal weight, overweight, and obese individuals. Four healthy habits were defined in their study: physical activity (engaging in physical activity more than 12 times a month), being a nonsmoker, consuming greater than 5 servings of fruit and vegetables a day, and drinking alcohol in moderation. These behaviors resulted cumulatively in a significant decrease in mortality regardless of baseline BMI, with particular benefit for those in the obese BMI category.<sup>12</sup>

In addition to the mortality benefits lifestyle medicine confers, it has potent effects on many chronic diseases, including cardiovascular disease, diabetes, stroke, dementia, and cancer. In Sweden, Akesson and colleagues published a study in the *Journal of The American College of Cardiology* that found 79% of myocardial infarctions could be prevented through healthy lifestyle choices.<sup>13</sup> Similar results were published by Chomistek and colleagues, who found that 73% of cases of coronary heart disease were attributable to poor adherence to a healthy lifestyle.<sup>14</sup> Moreover, The Lifestyle Heart Trial performed by Ornish and colleagues showed regression of severe coronary heart disease after 1 year of an intensive lifestyle intervention,<sup>15</sup> with effects persisting for at least 5 years.<sup>16</sup>

Healthy lifestyle practices can also prevent diabetes.<sup>17</sup> In the case of individuals who are at high risk of developing diabetes, lifestyle interventions were found to be more effective than medication at preventing progression of the disease.<sup>18</sup> Studies have demonstrated improved glycemic control with increased dietary fiber intake,<sup>19</sup> and partial remission of type 2 diabetes in overweight individuals.<sup>20</sup>

The benefits of lifestyle medicine extend to neurological diseases such as ischemic stroke<sup>21</sup> and dementia.<sup>22</sup> Chiuvè and colleagues published a study in the journal *Circulation* revealing a 52% and 47% reduction in ischemic stroke in men and women, respectively, due to adhering to a healthy lifestyle.<sup>23</sup> Superior secondary prevention benefits were found in patients with prior ischemic strokes who received lifestyle intervention in addition to medication. The lifestyle intervention group had fewer harmful vascular events and improved vascular risk factors as compared to the control group.<sup>24</sup> Engaging in leisure activity, physical activity, and possibly dietary choices<sup>25</sup> have all been shown to decrease the likelihood of developing dementia.<sup>26,27</sup>

Finally, protective effects in cancer have been published. Aleksandrova et al estimated that 16% of new colorectal cancer cases were attributable to not adhering to a combination of 5 lifestyle behaviors including maintaining a healthy weight, being physically active, not smoking, limiting alcohol consumption, and eating a healthy diet.<sup>28</sup>

Research has indicated that an individual's lifestyle can ultimately affect his or her DNA. Ornish and colleagues demonstrated that a 3-month intensive nutrition and lifestyle intervention could modulate gene expression in patients with prostate cancer.<sup>29</sup> Additional studies in obese women examining dietary interventions on liver gene expression,<sup>30</sup> and endometrial gene expression in women with polycystic ovary syndrome,<sup>31</sup> found positive alterations in genes related to metabolic risk factors. These studies provide more evidence that lifestyle factors are powerful determinants of health.<sup>32</sup>

The expanding scientific literature validating the benefits of lifestyle medicine has been translated into an effective population-level intervention as well. In 1972, the North Karelia Project was initiated in North Karelia, Finland.<sup>33</sup> The multilevel strategy focused on reducing sodium intake and replacing saturated fat with unsaturated fat. This intervention led to a marked reduction in cholesterol levels<sup>34</sup> and blood pressure,<sup>35</sup> with an accompanying 80% reduction in annual cardiovascular mortality, as well as a major increase in life expectancy, functional capacity, and health.<sup>36</sup> These changes have been maintained 40 years later,<sup>37</sup> with a recent follow-up study revealing an 82% and 84% reduction in coronary heart disease mortality in men and women, respectively.<sup>38</sup>

Importantly, the fundamentals of a health-promoting lifestyle and diet across the expanse of this diverse literature are remarkably consistent.<sup>39</sup> This consistency provides a strong basis for policy and public health practice but is obscured by the interplay of ongoing scientific inquiry, and pop-culture fascination with diet in particular. A news cycle that does not feature hyperbolic headlines about diet is a rarity.

These same fundamentals supported by diverse studies derive further support from the realm of ethnography. Buettner studied populations around the world that had a high number of centenarians and he reported his findings in a 2005 National Geographic cover story, "The Secrets of Living Longer,"<sup>40</sup> as well as in 2 national best-selling books.<sup>41,42</sup> What Buettner and colleagues called The Blue Zones include long-lived, vital populations in Costa Rica; Ikaria, Greece; Loma Linda, California; Okinawa, Japan; and Sardinia, Italy. These diverse populations serve to highlight both the marked variations, and the clear theme of a lifestyle conducive to longevity, vitality, and substantial immunity to chronic, non-communicable diseases.

Despite ostensible clarity about these patterns, societal and cultural forces have created obstacles to incorporating lifestyle as medicine into modern life. For example, in the United States, 38% of adults reported eating fruit less than once a day and 28% of adults reported eating vegetables less than once a day.<sup>43</sup> Nearly half of all Americans do not meet the requirements for aerobic physical activity, and only 29% meet the guidelines for strength training activities.<sup>44</sup> In 2012, it was estimated that 1 of 5 people was smoking.<sup>45</sup> Consuming poor diets, not engaging in regular physical activity, and smoking are still common behaviors in the United States, despite their clearly documented connection with chronic disease.

Failure to clearly express to the public, the weight of evidence and expert consensus as to what constitutes healthy living is among the cultural forces that lead to unhealthy lifestyle choices. This is especially true in the category of diet. The majority of nutrition experts agree on the fundamentals of a healthy diet.<sup>46</sup> Disagreements occur about relatively specific aspects of diet, such as the best protein to consume, the ideal macronutrient composition, or the harm of a specific ingredient. These differences are what receive the overwhelming preponderance of attention in diet books, the media, and from the food industry, resulting in conflicting messages.<sup>47,48</sup>

The US weight loss market in 2014 was valued at US\$59.8 billion, a portion of which is derived from diet book sales.<sup>49</sup> Thousands of diet books are published by scientists and researchers every year, each with the potential to exert influence over public perceptions. Popular diet books routinely make claims that are incongruent with the prevailing evidence<sup>10,13,39,50-53</sup> but come across as authoritative by citing the literature selectively.<sup>54,55</sup> These diet books, which are authored by scientists, coupled with the constantly changing media messages surrounding new dietary research, can create public confusion, doubt, or rejection of reasonable recommendations<sup>56</sup> and may foster a belief that nutrition scientists themselves do not understand what is healthy.<sup>57,58</sup>

Media messages may reinforce inaccurate nutrition assumptions held by the public. Media influence has been studied in the political sphere, where politically charged television shows have demonstrated an ability to increase political polarization of viewer attitudes,<sup>59</sup> and Internet campaigns have been used to influence voters.<sup>60</sup> Similarly, unproven or controversial nutrition claims can easily be shared on the Internet, with like-minded people amplifying claims in social media. This can result in a cyberspace “echo chamber.”<sup>61</sup> When this occurs, solitary views are shared and echoed back, resulting in eventual acceptance of the message as truth. There is further evidence within the political realm that suggests that a bidirectional relationship exists between media coverage and Internet blogs. With this relationship, content that is presented by the media may be adopted as topics for discussion in a blog. The inverse may also occur, in which a blog topic may receive enough attention to be formally covered by the media.<sup>62</sup> In either situation, there is the potential for propagation of inaccurate information.

Although the media and Internet exert influence on consumer perception and behavior, the food industry is able to create foods that directly affect human physiology.<sup>63</sup> Companies invest millions of dollars into food product design and hire scientists specifically to manipulate the chemical properties of foods.<sup>64</sup> These alterations have been shown to affect the “reward circuitry” in the brain. Specifically, positron emission tomographic scans demonstrated altered dopaminergic pathways in the brains of obese patients which are similar to imaging found in drug-addicted patients.<sup>65</sup> When people are driven to eat these foods, there is an increased demand for that food product. This usually results in increased sales and corporate profits. Furthermore, changing media messages that

target specific nutrients or ingredients (ie, fat, gluten, high-fructose corn syrup, etc) create an opportunity for companies to redesign their product lines to match this message.

The food industry has a vested interest in funding research that supports their products and enables them to cater their products to consumer demand. However, industry-funded nutrition-related articles may bias conclusions in favor of the sponsors’ products and undermine the integrity of nutrition research.<sup>66,67</sup> Nestle has examined industry-funded nutrition studies and reported that 145 of the 157 studies identified since 2015 contained results that were favorable to the sponsor.<sup>68,69</sup> A recent study published in the *Journal of the American Medical Association* exposed the sugar industry’s role in inappropriately influencing research studies in the 1960s that were designed to downplay the negative effects that sucrose consumption had on coronary heart disease.<sup>70</sup> Published studies subject to bias without suitable disclosure further increase confusion.

Despite such bias, however, the overall weight of published evidence inclines inevitably toward truth and supports a dietary pattern that focuses on whole, plant-based foods in sensible combinations, while limiting refined starches, added sugars, processed foods, and certain fats.<sup>39</sup> This has been described concisely as “food, not too much, mostly plants.”<sup>71</sup> This basic pattern was just the conclusion reached in the 2015 Dietary Guidelines Advisory Committee (DGAC) Report.<sup>72</sup> However, the official 2015 Dietary Guidelines<sup>73</sup> represent an altered version of the DGAC Report. The meat industry has exerted pressure on the federal dietary guidelines since 1977,<sup>74</sup> and successfully testified against the 2010 and 2015 DGAC Reports to remove language discouraging meat intake.<sup>75,76</sup> This results in the official Dietary Guidelines<sup>70</sup> diverging from the conclusions and recommendations of the scientists responsible for the DGAC Report.<sup>72</sup> The official recommendations are also subject to influences by other businesses, lobbyists, and media.<sup>74,77</sup>

The importance of having an unbiased message and a clear goal is critical to changing behavior. Multiple behavior change theories, including the goal setting theory,<sup>78</sup> the transtheoretical model of change,<sup>79</sup> setting SMART goals,<sup>80</sup> and motivational interviewing<sup>81</sup> are all contingent on having a specific, desired outcome. Interventions using goal setting are effective in promoting dietary change and have been advocated to be incorporated into nutrition education programs.<sup>82,83</sup> Psychological changes in individuals have been shown to predict dietary behavior changes. Importantly, the dietary changes that were made were then shown to predict health outcomes.<sup>84</sup> Although changing behavior is challenging, a critical step in the process is establishing a defined, achievable goal.

The same dietary choices leading to an ideal health destination for humans are also beneficial to the health of the planet. Global food production is responsible for 80% of deforestation, 70% of freshwater use, and an estimated 19% to 29% of human-generated greenhouse gas emissions.<sup>85-87</sup> Numerous studies have suggested that reducing the consumption and production of animal-sourced foods and replacing them with

plant-based foods could decrease factors associated with climate change (eg, greenhouse gas emissions) while concurrently improving the health of the people consuming this type of diet.<sup>87-91</sup> A 2016 study by Springmann and colleagues estimated that transitioning toward a more plant-based diet could reduce global mortality by 6% to 10% and food-related greenhouse gas emissions by 29% to 70% by 2050.<sup>91</sup> Research is demonstrating that the healthiest diet for humans may be the healthiest diet for the planet as well.

No single expert, regardless of academic stature or reputation, has the prominence to overcome the obstacles created by confusing media messages and deliver the fundamental principles of healthy living effectively to the public.<sup>92</sup> However, a global coalition consisting of a variety of nutrition experts, who collectively represent the views held by the majority of scientists, physicians, and health practitioners, can serve as the guiding resource of sound nutrition information for improved health and prevention of disease. The True Health Initiative was conceived for that very purpose.<sup>93</sup> It was launched in 2015 at the American College of Lifestyle Medicine's annual meeting and was established as a 501C3 in 2017. This nonprofit coalition has more than 300 experts and influencers from over 30 countries with diverse backgrounds who are willing to acknowledge that there is agreement regarding the fundamentals of healthy living. This agreed upon message, while not the final outcome, is an essential component that will serve as the foundation upon which the action can be taken.<sup>94</sup> At this point, the utility of such a coalition in advancing public health objectives remains to be proven, but the need for a signal to be heard above the noise is quite clear.

Establishing the fundamentals of lifestyle as medicine, especially for diet, presents the opportunity to decrease morbidity and mortality, while simultaneously improving the health of the planet. Significant scientific findings have now been reported to demonstrate and support these foundational principles. Analogous to outspoken cynics denying climate change and influencing public opinion,<sup>95</sup> healthy lifestyle and dietary advice are overshadowed by critics, diet books, the food industry, and misguided information in the media. A global health coalition of scientists, researchers, leaders, public influencers, and experts, such as the True Health Initiative,<sup>93</sup> has the potential power to address misconceptions and send the clear, concise message that the public needs to hear—that there is a resounding, global consensus on the fundamentals of healthy living, including healthy eating. Such an effort is prerequisite to translating the knowledge of lifestyle as medicine for people and planet alike into action.

That even a unified, diverse, global coalition of influential voices can rise above the din and discord that prevails regarding diet, lifestyle, and health remains to be proved. With the establishment of the True Health Initiative, that hope and hypothesis at least now become testable.

## SO WHAT?

### *What is already known on this topic?*

The fundamentals of a health-promoting lifestyle, including diet in particular, are robustly associated with dramatic reductions in risk for all major chronic disease and premature death. Despite strong and consistent research evidence in this area, spanning decades, populations, and investigative methods from mechanistic to randomized clinical trials, the perception prevails among health professionals and the public alike that there is considerable controversy about the optimal diet and lifestyle for health, and discord among the world's experts.

### *What does this article add?*

Establishment of the *True Health Initiative* effectively tested the hypothesis that while diverse experts preferentially talk about matters of current inquiry prone to both uncertainty and debate, there is prevailing consensus among the world's leading experts regarding the weight of evidence addressing the health effects of diet and lifestyle. The establishment of a Council spanning hundreds of authorities from over 30 countries, and representing a dietary spectrum from vegan to Paleo, all committed to the same fundamental principles affirms that hypothesis. This paper informs health professionals and health journalists that there is a major, global consensus regarding the basic components of lifestyle as medicine.

### *What are the implications for health promotion practice or research?*

Greater attention to consensus and the weight of evidence is necessary to convey accurately to the public the current understanding of diet, lifestyle, and health. In particular, new communication strategies are warranted to represent the shared understanding of experts, and avoid distortions born of preferential attention only to areas of greatest uncertainty and dissent. For public health to advance toward its objectives, the objectives themselves must be clear and widely shared.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

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