

Your Choice for a Longer, Healthier Life: Intermittent Fasting

Herman A Allison*

Family Nurse Practitioner, US Army Afghan/Iraq War Veteran, USA

***Corresponding Author:** Herman A Allison, Family Nurse Practitioner, US Army Afghan/Iraq War Veteran, USA.

Received: August 11, 2020; **Published:** September 15, 2020

DOI: 10.31080/ecnh.2020.02.00115

Keywords: Intermittent Fasting; Health; Longevity; Autophagy; Reduce Health Care Costs; Increased Productivity

Authors intent

To share this basic information about intermittent fasting with a large group of medical professionals in a simple easy to understand format that can be shared with patients.

Introduction

Mahatma Gandhi once said “It is health that is real wealth, and not pieces of gold or silver”. Sadly, diseases such as high blood pressure, diabetes and obesity are appearing at younger ages, compromising the health of the populace. The current estimates of obesity in the United States has been increasing over the past years. According to the CDC National Center for Health Statistics the prevalence of obesity was 42.4% in 2017~2018.

Health and medicine: The father of modern western medicine, Hippocrates said “Let food be thy medicine and medicine be thy food”. Most people would benefit from a plant-based diet in a timed approach to eating: intermittent fasting (IF). In the most basic terms, our body’s digestive system needs time to properly break down and digest the food we eat. After eating the body needs time for a comprehensive internal inventory, cellular repair or replacement.

Societal impact: Jamison., *et al.* [1] in their *Global Health 2035*, recommended low-cost interventions of lifestyle changes to include tobacco cessation, diet, and exercise which can greatly reduce non-communicable diseases within the next generation. Well-chosen health expenditures are an economic investment in the individual’s well-being with increased work productivity. Any country, large or small, would benefit from a healthy productive work force.

New medical evidence on fasting and its effects on health, aging and disease

For many years, researchers have known that caloric restrictions can have a positive impact on aging and lifespan in animals. CM McCay., *et al.* [2] first published evidence that calorie restriction retards aging and extends median and maximal lifespan in 1935. More recently, Mattson, Longo and Harvie [3] concluded that there are many physiological indicators of health that can improve with the use of IF eating patterns such as alternating day fasting and time-restricted feeding. They stated that IF can “...delay onset and slow the progression of neuronal dysfunction and degeneration in animal models of Alzheimer’s, Parkinson’s and Huntington’s diseases”. In addition, in human studies, the use of IF for a period of 2 - 6 months or more was found to have a protective affect against metabolic syndrome, which includes diabetes and cardiovascular disease. Malinowski., *et al.* [4] found that a time restricted eating pattern (16 fast/8 hour eating) may have potential long-term health benefits for weight loss and the reduction of inflammation. In one animal study de Cabo and Mattson [5] found that IF had the most benefit when the fasting period was up to 20 hours. De Groot., *et al.* [6] observed that in cancer patients, the

use of short-term fasting protected the body from the toxicity of chemotherapy while enhancing the treatment, reinforcing the healthy cells stress resistance while starving the cancer cells of nutrients.

Nobel input: In 2016, the Nobel Prize in Physiology or Medicine was awarded to Yoshinori Ohsumi for the discovery of autophagy. Autophagy is the process by which the body can identify and digest damaged cells during prolonged fasting. Ohsumi concluded that the autophagy process can be used for therapeutic intervention in a broad spectrum of human diseases. Autophagy can help eliminate invading microorganisms. This is called xenophagy and is a key role in the activation of the immune system and the control of infectious diseases.

An intermittent fasting analogy: In the most basic terms: Your body's digestive system is like a large processing and manufacturing company, digesting the food we eat then absorbing the nutrients needed for the body. It only wants to work about 8 hours a day, then take the next 16 hours to do an entire system inventory with the repair or replacement (restocking) of older or not fully functioning cells. During this 'fasting' time the body burns off the glucose in the body and then starts burning fat for fuel. The body secretes human growth hormone during this fasting time.

Intermittent fasting rules: No food of any kind. Individuals should only drink water, black coffee, or unsweetened tea. Fasting is NOT recommended for children, adolescents, pregnant women or the sick, except under a physician's oversight. Before starting any new diet and/or exercise program you should see your primary care medical provider for a full checkup, discuss your new plan and get approval. This would be a good time to get baseline measurements of height, weight, BMI, waist circumference and 'fasting' labs. Follow up with your provider at set intervals.

Types of intermittent fasting: Good, better, and best options

A Good approach to starting an intermittent fasting program is to have 12 hours between meals with only water, black coffee, or tea to drink. A simple way to start IF is to eat an early dinner Saturday night then have a Sunday 'brunch' about noon. On weekdays have dinner about 6 or 7 pm then no food until 6 to 7 am or later.

A Better approach is to go 12 - 16 hours between meals with the same fluid restrictions. This can be done one to three days per week. Alternatively, follow the 16/8 fasting/eating plan: confine meals to an 8-hour window and fast 16 hours during the 24-hour period.

The Best approach is to go 20 - 24 hours between meals. This is known as the one meal a day program. Pick the best time that fits your schedule and have a full meal (with dessert). This approach will give the human body the maximum benefit of autophagy (cellular repair), promotes human growth hormone, reduces cardiovascular and diabetes risk, and helps lose weight. During this 2 - 4 hour window the goal is to get all the nutrients the body needs, but not all at one large meal. Instead, eating 2 medium size meals with the full variety of quality proteins, fresh fruits and vegetables, health fats (nuts) and whole grain carbs will ensure maximum absorption of fat- and water-soluble vitamins.

One meal a day: As the name implies – You only eat one full meal per day. This time line gives the maximum benefit for the body to find and replace aging cells, increase human growth hormone and many other benefits. For a busy person - this can also save time during the day that can be used for other things - like exercise?

Longer fasts 4 - 22 days: De Toledo, *et al.* [7] published a large, observational fasting study of over 1400 patients conducted at the Buchinger Wilhelmi Clinic. In the study of fasts for 4 to 21 days, the patients experienced reductions in blood glucose, weight, abdominal circumference, and blood pressure. Patients reported an increase in physical and emotional well-being with an absence of hunger feeling in 93.2% of the subjects. Buchinger fasts have been used in Germany since the 1920s to "preserve, promote and restore health".

Food intake: What we eat is as important as when we eat. Individuals are counseled to consume whole grain and plant-based foods. Intake of sugars, including artificial sweeteners, and white flour should be reduced if not eliminated.

Food preparation: How we prepare and cook our food can either help maintain the nutrients in them or reduce and destroy them. Fabbri, and Crosby [8] states that “Steam cooking: best procedure to preserve and enhance nutritional quality of fresh broccoli.” According to a large review of studies in the *International Journal of Gastronomy and Food Science* that compared different cooking methods state that “Boiling can cause water-soluble nutrients-like vitamins B and C-to leach out into the water, but they’re retained with steaming”. Your cooking choices may include: Steaming, poaching, broiling, grilling, Sautéing, baked, fried or no cooking (Raw). Pick the best way that keeps most of the nutrients in the food.

Social, cultural and financial impact: Intermittent fasting requires no drugs, with the benefits of lower medical costs, lower grocery bills, less time devoted to meal preparation and cleanup, giving more time for family and other activities [9-11].

Conclusion

At the individual level controlling what and when you eat is a simple low-cost health intervention. The benefits of IF can be seen in a few weeks to months. At the societal level, investment will be needed to educate and encourage behavioral change of eating/social habits. IF is not a “Magic Pill” for all health issues. A broad adoption of IF would increase the overall health of the population, leading to less health care costs, resulting in fewer sick days at work, increased workplace productivity and a longer healthier life.

Acknowledgment

To Lisa Kilburn, MLIS, AHIP, at Southern Regional AHEC (Fayetteville, North Carolina) Family Practice Residency program medical librarian for assisting me with the research and editing of this article.

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Volume 2 Issue 10 October 2020

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