

LIFESTYLE MEDICINE: A CRUCIAL STRATEGY FOR OPTIMAL HEALTH AND LONGEVITY.

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ABSTRACT:

Background:

Life expectancy in many developing countries is generally low. The quality of life of most people in such countries especially among those who live longer than the average life expectancy is poor. The aging process in most people in such countries is associated with many preventable chronic medical problems. Lifestyle medicine offers the evidenced based interventions that will enable most people in the world but more importantly in developing countries improve on both their quality of life and longevity.

Objectives:

This review highlights factors that prevent most people from enjoying optimal health and to provide evidenced based equitable lifestyle medicine interventions that prevent chronic non-communicable diseases and promote quality longevity.

Method:

This narrative review was carried out following a detailed search of pubmed, Medline, Google scholar and other online databases on the subject.

Conclusion:

Lifestyle medicine provides the essential package for optimal health and longevity. Lifestyle modification of multiple health behaviors is an evidenced based strategy for the practice of lifestyle medicine at individual level. Starting with the four core health behaviours is a well tested approach on the pathway to quality life and longevity.

Keywords: Lifestyle medicine, Lifestyle modification, optimal health, longevity

Introduction

Global mortality is due to a combination of communicable and non-communicable diseases. The non-communicable diseases are the leading cause of death in the developed world and also account for a greater proportion of deaths in developing countries¹. Most of the non-communicable diseases² and some communicable diseases are linked to inappropriate lifestyle. The combination of poor diet, physical inactivity, obesity, excessive alcohol and cigarette use have been reported to account for 55% of all cause mortality, 44% of all cancer mortality and 72% of all cardiovascular mortality³. By 2020 WHO

estimates that two thirds of all diseases globally will be lifestyle related⁴. This narrative review focuses on lifestyle medicine as an evidenced based strategy that mitigates the burden of these non-communicable diseases, promote optimal health and healthy longevity.

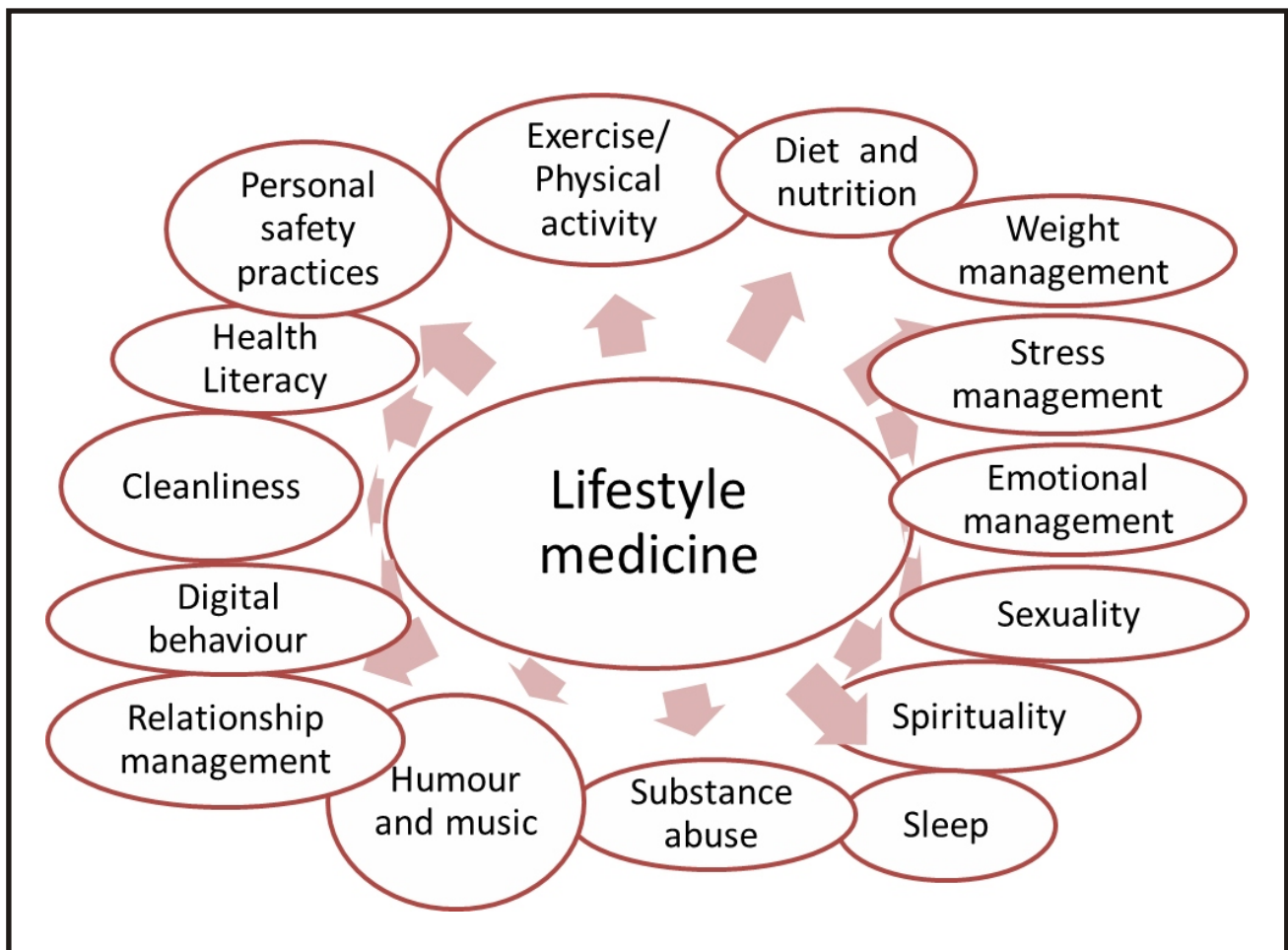
Lifestyle medicine and optimal health

The emerging field of lifestyle medicine provides the evidence that lifestyle interventions work and lifestyle medicine should be additional skills practiced by all physicians and health workers. The American Journal of Lifestyle Medicine defines lifestyle medicine as the integration of lifestyle

practices into the modern practice of medicine both to reduce risk factors for disease and /or where disease is present to serve as adjunct to its therapy and control⁵. Essentially, Lifestyle Medicine involves the coaching of an individual or group of individuals on how to cope with activities of daily living in order to reduce risk factors for disease and /or where disease is present to ameliorate its complications. Lifestyle on the other hand refers to the pattern of an individual's behavioral choices and practices that are related to elevated or reduced health risk⁶. Lifestyle modification implies making changes in one's lifestyle that minimize such a person's health risks. Such changes should be lifelong in order to ensure optimal health and

longevity. Lifestyle medicine is therefore both for prevention and treatment of lifestyle related diseases⁷.

Lifestyle modification is the approach through which lifestyle medicine is administered and served as the strategy for achieving optimal health which is the state of deliberate and constant efforts to remain healthy and to achieve the highest potential for well being⁸. Achieving optimal health warrants that one demonstrates positive actions in the six areas of physical, spiritual, intellectual, emotional, social and environmental domains⁹. Lifestyle medicine addresses a wide range of issues from these domains as shown below:



Source: Author's compilation.

Lifestyle Modification, optimal health and longevity

The following lifestyle interventions have been shown to contribute to prevention of non-communicable diseases, optimal health and longevity.

Exercise

Those who are physically active throughout the adult life live longer than those who are sedentary. In a landmark study in 1986, leisure time activity was monitored in a cohort of 17,000 Harvard graduates. Those who were least active after graduation had a 64% increased risk of heart attack compared with their more energetic classmates. Also those who expended more than 2000 calories of energy in active leisure activities per week lived, on average, two and a half years longer than those classified as inactive¹⁰.

In a narrative review of systematic reviews and meta-analyses, the authors provided irrefutable evidence of the effectiveness of physical activity on exercise in primary and secondary prevention of cardiovascular diseases, Diabetes Mellitus, Hypertension; Obesity; Depression, Osteoporosis and Cancers mainly of the breast, colon and endometria.¹¹.

The intensity of exercise has been shown by Lee et al to be inversely and linearly associated with all cause mortality, a pattern known as a dose-response relationship¹².

In a narrative review of six meta-analyses on the effect of exercise on anxiety and depression, Landers et al concluded that exercise significantly reduce anxiety; improves the symptoms of depression and its effects was higher than the effect of a single antidepressant¹³.

Sleep and rest

Sleep, a form of resting and a reversible state of reduced consciousness and activity characterized by a decreased in responsiveness to external stimuli and assumption of a typical posture, is essential for optimal health and longevity¹⁴. Those with adequate regular sleep tend to have higher healthy lifespan compared to those with inadequate sleep. Sleep requirement varies with developmental stages of humans with adults requiring between 6-9 hours in every 24 hours. Sleep regulates immune function, improves

learning, improves memory, reduce stress, regulates metabolism and endocrine functions such as production of growth hormones, leptin, ghrelin and reduce cortisol level¹⁵. Sleep slows down the aging process. How well one sleeps is also an important predictor of how long one lives¹⁴. Inadequate sleep has been associated with hypertension, diabetes mellitus, poor immune function, overweight, Depression heart disease, mood disorder and reduced life expectancy. Institutes of Medicine reported that between 50,000 and 100,000 deaths yearly in the USA result from medical errors that are attributable to insufficient sleep¹⁴. In one study, the authors concluded that hospitals could reduce the number of medical errors by about 36% by limiting an individual doctor's work shifts to 16 hours and reducing total work schedule to not more than 80 hrs per week¹⁶. Sleep hygiene implemented through lifestyle modification is the firstline of treatment for most sleep problems including insomnia¹⁷.

Diet

Diet rich in fruits and vegetables; low-fat dairy products with a reduced content of saturated and total whole grain or cereal with high fibre often referred to as Mediterranean type diet promotes optimal health and longevity¹⁸. A diet high in whole grains, fruits and vegetables provides micronutrients, minerals and vitamins all of which contribute to improve immunity. Such a diet also provides large amounts of natural antioxidants which minimize free radical formation and reduce oxidative stress leading to lower incidence of cancer. Omega-3 fatty acids found mainly in fish and certain nuts and seed block *COX-2* expression and reduce inflammation that has been implicated in the early stages and progression of prostate, breast and colon cancers. There is inverse association between fiber intake and colorectal adenoma. The Dietary approach to stop hypertension (DASH) diet which consists of these elements and also low salt has been used to control hypertension¹⁹.

In the Nurses' Health study and the Health Professional study, the consumption of both peanuts and tree nuts was associated with reduction in both total and cause specific mortality. Significant inverse association was demonstrated for deaths due to cancer, respiratory and heart diseases. The more frequent one takes the nuts weekly the higher the protection against diseases and death²⁰.

Weight maintenance

Weight refers to how heavy an individual is. It is essentially the degree to which an individual is drawn towards the earth by gravity. Weight should be managed well so as to reduce the risk of disease and to enjoy good health. Weight should be maintained at a body mass index range of 18.5-24.9 kg/m² as prescribed by World Health Organization²¹.

Poor weight control leads to overweight. Unchecked overweight leads to obesity both of which have assumed epidemic proportions in both developed and developing countries. Overweight and obesity have become problems in children, youth, adults and the aged. A key underlying cause of overweight and obesity is inappropriate lifestyle.

Overweight and obesity are risk factors for chronic non-communicable diseases¹. Common diseases associated with overweight and obesity include hypertension, coronary heart disease, diabetes, hyperlipidaemia, arthritis, mood disorders and reduced life expectancy²². The good news is that overweight and obesity related medical problems can be prevented by lifestyle modification and therapeutics. Weight management strategies include regular exercise, portion size control, behavioural modification, drugs, surgery and appropriate use of water. In a randomised control study, participants who took 500mls of water before each meal significantly lost weight as compared to the control²³.

Spirituality

This refers to how one finds purpose and meaning in life²⁴. Spiritual people demonstrate a relationship with higher power or being. They also show love, have hope and a sense of meaning and direction in life. They also demonstrate altruism such as providing assistance without expecting anything in return. They often participate in prayers which are a means of communicating with higher powers or being²⁴.

People that attend religious services regularly tend to enjoy better health, live longer, recover from illness faster and with few complications than those that do not attend such services^{25,26,27}. They also cope better with illness and experience less depression. These beneficial effects have been ascribed to social support, easily accessible coping resources, social regulation, prayers and forgiveness. Religious participation has been noted

to be stronger than physical health and financial wealth as a determinant of psychological well-being in African Americans²⁵.

Social support

Giving one's self in service to others is a tested approach to creating and maintaining healthy interpersonal relationships. Such friendship engenders strong social ties and support. Maintenance of good social ties with families and friends has been shown to improve mental health, bolster immunity, reduce anxiety and boost recovery from illness and extend life²⁸. Helping others does not only lead to stronger social ties but independently contributes to longevity²⁹. Strong social ties have been associated with better recovery rate following heart attacks. More than a dozen studies linked good social support with lower risk of early death.

Lack of social support has been reported to carry similar cardiovascular risk as high blood Pressure and smoking²⁸. People lacking social connections are two to three times more likely to die prematurely as compared to those with support. Older individuals who perceived their social support as impaired are more likely to die prematurely from all causes³⁰.

Outlook

This refers to how a person views and interprets life events especially unpleasant events. Based on how people perceive and interpret life unpleasant events, they are classified as optimist or pessimists. Optimists view things in a positive sense, have hope, consider unpleasant life situations as temporary and related to the prevailing circumstance and not due to their faults²⁸. They are often willing to start all over again in the face of major calamities.

Optimists tend to confront challenges head on and end up with less stress and more success. They often demonstrate high level of self-efficacy which is one's belief in his ability to successfully carry out a course of action. They are more successful with lifestyle modification and they live longer. Pessimists on the other hand do exhibit the opposite characteristics of optimists³¹.

Optimistic explanatory style is associated with fewer health problems, better coping with daily routine, having more energy and showing greater ease with social activities. Optimists have fewer

incidence of coronary artery disease and recover better from heart attacks.²⁸

Optimists are more likely to demonstrate positive adjustment to major life events such as death of a loved one or heart attack which is a mark of good emotional resilience which is associated with better health and longevity^{31,32}.

Alcohol

Alcohol is commonly available in developing countries in the following forms: home made alcohol beverages (2.3 10 % alc Vol); Beer (4-5 %); Wine (10-15%); Distilled spirit (20-40%)³³. Males consume more alcohol than women and ethanol by-product acetaldehyde is not only harmful but carcinogenic. Alcohol use often progresses to addiction leading to numerous medical complications³⁴. At best, alcohol should be avoided by those who have never tested it. Those indulging in it should keep to the safety limits. Men should not consume more than 3 units of alcohol while women should not consume more than 2 units of alcohol with a unit being 10 grammes of ethanol and a millilitre of alcohol containing 0.79g of ethanol. Consumption of alcohol above these levels is associated with high morbidity and mortality. There is a J-shape dose-response relationship between alcohol consumption and morbidity which in most cases usually lead to preventable mortality³⁵. Consumption of alcohol at the rate of 60ml daily is associated with hepatocellular carcinoma and 26mls daily associated with colorectal carcinoma.

Tobacco

This complex chemical substance has about 4000 chemicals including 60 carcinogenic substances implicated in cancer at 20 sites in the human body³⁴. Common cancers associated with tobacco use include cancers of lungs, oro-pharynx, colon, urinary bladder, acute non-lymphocytic leukemia, liver and prostate^{33,34}. Second hand smoking is as dangerous as primary smoking. In the history of mankind, tobacco has never been reported to have any beneficial health effect yet human beings for social reasons have continued to use it for social reasons. Once a person stops smoking, lung functional recovery begins without further delay. At the end of first non-smoking year risk of heart attack decreases by half and further reduce to the same level as those that have never smoke by the end of the fifth year. Avoidance of tobacco use is associated with better quality of life and longevity³⁴.

Stress

Stress refers to an individual's mental, emotional and physiological response to threatening, new, exciting or frightening situations. It is usually a condition or feeling experienced when a person perceives that demand exceeds the personal and social resources the individual is able to mobilize³⁶. It exists in a continuum ranging from low to high levels. Low level of stress usually referred to as eustress is known to spur individual performance while high level of stress known as distress reduces performance and engenders ill health. Distress or high stress level leads to increase levels of adrenaline and cortisol; reduces body level of vitamins A, B,C, E; reduces neurotransmitters such as serotonin and dopamine; and increases the level of free radicals³⁷. Studies have shown that 75- 90 percent of all illness and disease are stress related³⁷. Common sources of stress include level of personal health, quality of interpersonal relationship, management of personal finances, career and workplace factors; and level of handling of home and family issues³⁸. High level of stress is associated with a wide range of medical problems including hypertension, myocardial infarction, eating disorders, depression, diabetes, migraine, diarrhea, sexual dysfunction, poor immunity, insomnia, cancer, and accelerated aging³⁴. High stress level can be managed effectively through lifestyle modification.

Multiple Health Behaviour Change, Optimal health and longevity

Achieving optimal health warrants that one engages in the practice of a range of health behaviors. Also the availability of key risk factors to health as analysed above requires that an individual desirous of quality long life should modify his lifestyle to achieve positive actions in the domains of optimal health and minimize the development of chronic diseases with attendant high mortality. Lifestyle modification that enables an individual to avoid tobacco use, avoid or minimize alcohol use, maintain an acceptable weight, performs regular exercise, eats a healthy diet, be spiritual, practice optimism and enjoys a good level of social support has been shown to lead to high quality of life and longevity^{39,40}.

The development of some health habits improves success with the development of subsequent health habits due to increase in self-efficacy in general but also due to certain inherent factors with the various health behaviors. In a review of 150 studies on

multiple health behaviour change interventions on primary prevention of diseases, Proschaska et al⁴¹ showed that there are three types of clusters in which multiple behavior change interventions occur. The energy balance behaviours of Physical activity and diet; the addictive behavior such as smoking and use of drugs/alcohol; and disease related behaviours such as prevention of cardiovascular diseases and cancer. A combination of four core behaviours of no smoking, normal body mass index, regular physical activity and eating healthfully have been found to have beneficial effects on other risks factors of serum cholesterol, blood pressure and blood sugar leading to marked reduction in the risk of cardiovascular diseases and a variety of cancers. Achieving these core health behaviours should be the first step towards optimal health. This be should be followed by mind body approach that enables one incorporates spirituality, good interpersonal relationship and optimism so as to engender optimal health and longevity.

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