



## Lifestyle for Stress Buffer and Reverse Cell Aging



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### Correspondence Author <sup>a</sup> Abstract



The current research is about lifestyle term consisted of a lot of sense. Lifestyle is life every day. Stress is also a fundamental part of life, exists in every life. This interaction occurs continuously throughout life. The human body also interacts as a whole. Based on the knowledge and experiences stressor will be perceived, as a certain pattern of behavior. It will have an effect on the mechanisms in the body, organ, and cellular. This interaction can lead to cell damage and death, or to maintain the cells, therefore, the cells extended their age. Lifestyle can influence this process through various mechanisms. It can be influenced directly through the balance of the hormonal system. It can affect enzymes and indirectly through the mechanism of stress. It ultimately affects cellular processes. A healthy lifestyle can counteract stress, and causing the aging process of cells delayed.

### Keywords

aging;  
behavior;  
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stress;

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## 1. Introduction

Lifestyle or habits are carried out every day. It can, in fact, affect health. It also can be considered as an option that can be chosen to do. It becomes especially important now due to the changing patterns of diseases, from infectious diseases to metabolic diseases caused by lifestyle. Lifestyle makes humans more playful in determining their health and quality of life.

Lifestyle is a term often used in the research field of health promotion, epidemiology, and some fields in the social health sciences. Understanding of this lifestyle is very diverse. There are four factors are focus on the research of lifestyle, namely the use of alcohol, smoking, diet, and exercise (Cockerham, 2005). Healthy lifestyle such as exercises, not only reduce the impact of stress but also build defenses to face the upcoming stressor. This capability is a tool as part of a lifestyle that is chosen to limit the exposure of the stressor, as part of the appraisal and coping mechanisms, and as part of the physiological state of the recovery process. These improvements will be the hope of improvement towards healthy and resilience (Hawkey *et al.*, 2005).

The process of aging is a process that is complex and challenging. It is complex due to it has been happening since birth and is influenced by many factors both from outside and from within. Challenging because of the latter is highly developed knowledge of the aging process. To desire to stay healthy in old age. That is why various things are conducted to know the secret. Various factors that influence the aging process can be broadly divided into factors of internal and external factors. Outside or external factors are lifestyle factors. This lifestyle can affect several factors related to the aging process or cell death. There are several ways of the lifestyle in influencing cell death. The present study discussed the relationship between stress and lifestyle on the impact of stress on cell death.

## 2. Materials and Methods

The current research used a qualitative method. It is conducted based on the phenomenon happened in human behavior. It is regarded as a lifestyle in human life in the world. This is an overview of how the lifestyle has an influence related to stress buffer and reverse cell aging. The explanation and elaboration refer to the previous research that was conducted towards lifestyle as one of the ways to reduce stress buffer and aging in the human being.

## 3. Results and Discussions

### 3.1 Lifestyle

Lifestyle is a term defining difference in the literature. Lifestyle is an expression of the self-concept of persons; all of them are of the mind and feelings. Self-concept is influenced by several factors such as culture, subculture (*family, social class, etc.*), values and personality (Hawkins, 1998). Some things you can do to get a long life, among others; avoid stress and depression, exercise at least 30 minutes per day, limit eating saturated fat diet, sleep eight hours a night, minimum drinking alcohol, not smoking, maintaining a healthy weight, and thinking young (Klatz & Goldman, 2007).

Lifestyle is a person's decision to control their health. It increasingly advanced knowledge humans have more free decision to perform or behave according to his purpose. Life can't be separated from the sterile environment. Cockerham a model of a healthy lifestyle as follows; 1) variable structure (*class, age, gender, race/ethnicity, togetherness, living conditions*); 2) Socialization and experience will affect; 3) life choices. The structure will give rise to opportunities. Life choices and opportunities to interact establish what to do as a habit is a practical action. This action can be a healthy lifestyle and vice versa (Cockerham, 2011).

Definitions and explanations of some of the above, it can be concluded that the lifestyle is everyday behavior patterns are influenced by the understanding, experience of life, conditions, environment, and

culture. If what such negative daily (*smoking, drinking alcohol, do not exercise, irregular sleep, etc.*) will determine the effect of human life toward the negative, or vice versa will have a positive impact.

### 3.2 Lifestyle and stress

Lifestyle is a pattern of daily behavior, and stressor is something happened every day. Healthy behavior is very important for the balance of anabolic and catabolic hormones. The state of the human body is always in a state of homeostasis, in a state of equilibrium. Stress is a state of the loss of homeostasis (Wisneski & Anderson, 2005). The relationship between the life full of experiences with high stressors with the aging process is influenced not only by differences in exposure to the stressor itself but also by the person's response to stress and recovery experience of the situation (Hawkey et al., 2005).

How can individuals receive events that create stress, may be more important than the event itself. Individuals with higher coping skills and will likely receive a lighter effect on the immune system, rather than with individual bad coping skills, which will cause the immune system and are susceptible to diseases. The important factor is the ability of individuals to cope with stress (Blauer-Wu, 2002). Stress is very basic things that are part of life, which can provide positive and negative effects on health. If people are aware of his ability to control his behavior to stress, especially his attitude, he can control the overall stress. Stressor itself does not cause physical and mental damage. The reactions and decisions however the individuals themselves. It is important for all individuals to learn how to control the mind, attitude, and behavior when there are stressors (Lorenzt, 2006)

A very stressful experience, unlike the loss of a child, loss of a spouse, divorce can destroy a person. Stressors will stimulate and increase the enzyme in the adrenaline glands to produce stress hormones, such as epinephrine, norepinephrine, and corticoids. These hormones are responsible for biochemical changes in the nervous system, hormones and the immune system, which will affect the entire organ system (Blauer-Wu, 2002).

A study was conducted to determine the effects of stress through the improvement of religiosity, spirituality, healthy lifestyle, and a happy feeling subjectively (*subjective physical well-being*) in 221 patients suffering from chronic diseases. In this study, it was found that spirituality, physical activity, and a healthy diet have a good contribution to the feeling of happiness (Bowell et al., 2006).

The results of earlier studies seem between lifestyle and reaction to stressors has a strong relationship. Lifestyle depending on how his understanding of what would be achieved, then perform certain activities which eventually became the pattern of life (*lifestyle*). The response to stressors is influenced by understanding, judgment, experience, coping mechanisms, attitudes, and behaviors. So on an individual actually stressor will have its own lifestyle. There are always responds positively so that the stressor be an experience to face the upcoming stressor or vice versa.

### 3.3 Process of aging

Aging is not inevitable. Being old is something that can be avoided. In view of the present, which is associated with the inability and aging is caused by physiological dysfunction which in many cases can be corrected with medication. Regarding a systematic process that can biologically fix will be able to extend the life, and quality of life can be maintained and improved (Klatz & Goldman, 2007).

Many existing theories to explain the aging process. Wear and Tear Theory of Dr. August Weismann (1882), that the burden of the use or employment tissue cells that lasts a long time, accompanied by excessive dieting, physical load and stress will result in torn or fragile tissue cells and dead. Telomerase theory, the theory that each cell is described by a set of *Deoxyribonucleic Acid (DNA)* called telomeres (*clock*) located at the end of each chromosome, in the nucleus. After mitosis will shrink and shorten telomeres, when telomeres are too short then the cell will die. The enzyme telomerase is an enzyme that is present in most of the human body. The enzyme telomerase can lengthen telomeres. The enzyme telomerase in the body largely inactive, so that the cells become dead. Only in some parts of the cell just as active as the homeopathic cells, blood-forming cells, so it does not die. Cancer cells can not die because it produces the enzyme telomerase.

The hypothesis of Wong stated that the aging process of protein degradation caused by the active protease enzyme. The active enzyme is due to the presence of oxygen free radicals. The number of damaged proteins

will lead to cell death or apoptosis. Growth hormone can activate the formation of protease inhibitors, which can inhibit the direct action of the protease enzyme (Klatz & Goldman, 2007).

The endocrine theory explains that the process of aging and hormonal changes that are essential for neurons; 1) coordination of communication and response on all systems of the body with the external environment; 2) Study the physiological response to environmental stimuli; and 3). To maintain optimal function for the reproduction and survival in responding to the environment (Weinert & Timiras, 2003). In the aging process can be clearly attributed to a decrease in anabolic hormones such as dehydroepiandrosterone (DHEA), sex hormones such as estrogen and testosterone, *Growth hormone (GH)*, and Insulin-like *Growth Factor-1 (IGF-1)*, otherwise catabolic hormones such as cortisone, and catecholamine tendency increased with increasing age. Anabolic and catabolic hormone imbalance evident in the aging process (Epel *et al.*, 2007).

The process of aging and immunity, this can be explained by the discovery of the relationship between the aging process with the thymus gland. In the aging process occurs depreciation of thymus gland. The result is a decrease in T cell-lymphocyte. This decline will be accompanied by an increase in diseases of the aging process (Klatz & Goldman, 2007).

Several aging theories above, it can be seen that the aging process can be slowed or prevented by maintaining telomeres, by activating telomerase, or by increasing the growth hormone that can be inhibited its protease enzymes, proteins ultimately damage can be prevented. It is still maintaining hormonal balance catabolic and anabolic hormones, especially, and improve immunity. Thus the problems of what to do to get those results.

### 3.4 Lifestyle, stress and aging proses

Restore damage or cell death feels very heavy, to prevent if possible it would be easy to do. If we look at some things that have been described above, there are several things that can happen. Lifestyle may directly prevent cell aging. Unlike finding in a study conducted by Ornish on the increase in telomerase activity and comprehensive lifestyle changes, found that comprehensive lifestyle changes significantly increase activities of telomerase, telomere awake and causing ability. The study was conducted on 30 men who were diagnosed by *biopsy* with a lower risk of prostate cancer. The enzyme telomerase is measured at the beginning and After 3 months. Lifestyle changes are made is 3 days retreat, then follow with a low-fat diet (10 % calories from fat), fresh foods, eat fruits, vegetables, low-carbohydrate, moderate aerobic exercise (*road 30 minutes/day, 6 days per week*), stress management (*yoga, meditation, breathing, imagery, progressive relaxation technique 60 minutes per day, 6 days per week*), and a support group one hour sessions once a week. Stress is also measured by the Impact of Event psychologies Scale. The result is the third month is an increase in the activity of the enzyme telomerase. Increased telomerase enzyme activity was significantly associated with decreased *low-density lipoprotein (LDL)* and decreased psychological distress (Ornish, 2008).

Research to determine the relationship of physical activity with telomere extension and telomerase activity performed on 69 (34 male and 35 female) subjects aged 50-70 years. Exercise Energy Expenditure (EEE) was measured with the Yale Physical Activity Survey. Physical activity was measured with 5 levels namely; 1) very active (*regular aerobic exercise and sports*); 2) Physical fairly active (*sport and active leisure*); 3) Moderately active physical (*hobbies, active leisure activities*); 4) Physical fairly inactive (*very few leisure activities*); 5) very physical inactive (*no sports, no physical leisure activities*). The result is a significant relationship between physical activity (moderate) with the extension of telomeres, compared with the highly active and less active (Ludlow *et al.*, 2008).

Healthy behaviors (health behavior), make a major contribution to the process of anabolic and catabolic hormone balance. Healthy lifestyle such as activity, diet, sleep associated with *hypothalamic-pituitary-adrenal (HPA)* axis and GH axis. Lifestyle is also associated with DNA damage such as smoking, drinking alcohol, eating excess fat associated with high oxidative stress (Gidron *et al.*, 2006)

Chronic stress tends to cause hormonal balance shifts towards low levels of anabolic hormones and high levels of the catabolic hormones cortisol and low or high levels of androgen and growth hormone. This leads to oxidative stress of aging cells. Chronic stress will cause the offending HPA axis in different ways. As an example of negative feedback will lead to failure, delay recovery from stress, and can lead to low or high cortisol levels. Anabolic hormones such as androgens (*DHEA, testosterone*) and GH axis somatotropic like and

insulin-like growth factor 1 (IGF-1) also plays an important role in the relationship of stress and aging. The hormone decreases with age and is often associated with metabolic ugly.

Stress has a relationship with telomerase and telomere maintenance. Cortisol has a relationship with telomere shortening. Telomere shortening is also associated with high levels of *interleukin-6 (IL-6)* and *C-Reactive Protein (CRP)* in patients on hemodialysis. Oxidative stress clearly has a negative association with telomere maintenance, whereas administration of antioxidants stop telomere shortening and extend the activity of telomerase. The other side comprehensive lifestyle intervention was associated with increases in relative telomere length after 5 years follow up (Ornish *et al.*, 2013).

A study conducted with the aim of identifying factors that can be changed, which is associated with long life at the age above 75 years. There were 1810 participants in the study, the study followed for 18 years (1987-2005). The result was 1661 subjects died during the observation, 50 % of subjects older than 90 years. Physical activity is closely related to life. The conclusion from these studies is a lifestyle such as not smoking, physical activity related to the extension of the age (Rizzuto, 2012).

By reducing the perception of stress, and increase healthy behaviors can lead to improved hormonal balance (*anabolic and catabolic*), decreased cortisol and increased anabolic hormone and repair process occurs. Repair hormonal balance is likely to slow the aging process of cells (Epel, 2009). Interventions to change unhealthy behaviors and coping skills to fix more than one method gives results only. Increased physical activity through sport is an important intervention to restore the balance of anabolic and catabolic hormones, and improve well-being.

#### 4. Conclusion

Lifestyle has a close relationship with stress. Assessment, understanding of the stressors will determine the response to be made. This response became a very important part of their effects on the aging process. This response is also one of the important lifestyles. Some lifestyle that is often studied is the use of alcohol, smoking, diet, and exercise.

There are several ways of lifestyle affects the aging process. It can directly affect the aging process of cells, through the Mechanism of stress which then causes hormonal balance and cause the aging process, can also through their effects on the hormonal system then affects cell aging proses. Thus, if it is conducted in a lifestyle intervention will give the effect through various mechanisms on top to prevent the aging process. Build and develop a healthy lifestyle is very important, in order to slow down the aging process.



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