



Exercise and Good Nutrition: Roadmaps Towards Aging Gracefully Among Growing Adults in Nigeria

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Abstract

Aging is a process which commences at birth and continues through infancy, childhood, adolescence and adulthood to death. It is continuous wearing away and repair or replacement of body tissues to a stage where tear of the body no longer responds to changes. The purpose of this paper is to examine the roles of exercise and nutrition towards aging gracefully among growing adults in Nigeria. It was discussed under the following sub headings: typical changes with aging, successful aging strategies, physiological aspect of aging, effects of exercise and nutrition on aging, exercise precautions and nutrition needed for successful aging. The paper therefore concluded that aging is inevitable but can be slowed down with adequate exercise and good nutrition. It therefore recommended that adequate, planned exercise should be inculcated in one daily activity so as to age gracefully.

Keywords: Exercise, Nutrition, Roadmaps, Aging Gracefully, Growing Adults.

Reference to this paper should be made as follows:

Joseph, R., & Kimisoutei, S. I. (2018). Exercise and Good Nutrition: Roadmaps Towards Aging Gracefully Among Growing Adults in Nigeria. *International Journal of Scientific Research in Education*, 11(2), 265-275. Retrieved [DATE] from <http://www.ij sre.com>.

INTRODUCTION

The goal of every individual is to attain optimal health and grow. The average life expectancy for men and women in developing countries is gradually dropping from 60 years to 55 years and the healthy life expectancy — Disability Adjusted Life Expectancy (DALE) has reached 45-51 years (World Health Organization, 2015). The drop in this life expectancy has been as a result of ravaging non-communicable diseases such as heart attack, hypertension, stroke, diabetes, cancer, kidney diseases brought about by physical inactivity and poor nutrition (Adegboye, 2013).

During the twentieth century, effective public health strategies and advances in medical treatment contributed to a dramatic increase in life expectancy in Nigeria. Many of the diseases that claimed our ancestors including tuberculosis, diarrhoea and enteritis, malaria and smallpox, no longer carry the much threats they once did. Although they may still present significant health challenges in Nigeria, these diseases are no longer the leading killers of Nigerian adults. However, other diseases such as heart diseases, cancer and diabetes have continued to be the leading causes of death every year since the late nineties (Kolawole, 2011). Heart diseases and cancer pose the greatest risks on people's health, as do other chronic diseases and conditions such as stroke, chronic lower respiratory diseases and diabetes.

Fries (2009) defined aging as an irreversible biological changes that occur in all living things with the passage of time, eventually resulting in death. He further stated that aging is a progressive functional decline or a gradual deterioration of physiological function, including a decrease in health and increase in vulnerability. Center for Diseases Control (CDC, 2011) also defined aging as the continuous wearing away and repair or replacement of body tissue to a stage where tear of the body consequently decline in functions of body tissues. Francis (2015) theorized that aging occurred as a result of many factors such as genes, environment, disease, lifestyles and dietary habits. How and when this occurs is unique to every individual. Aging is a process which commences at birth and continues through infancy, childhood, adolescence and adulthood to death.

Growing adults are seeking ways to maximize their physical, mental, and social wellbeing to remain independent and active as they age. Aging gracefully means living a long, productive, meaningful life and enjoying a high quality of life (Wilson, 2009). Glen and Floss (2014) also conceptualized aging gracefully as living to an advanced age, having good physical health, a positive mental outlook, being cognitively alert, having a good memory and being socially involved. WHO (2014) also defined aging gracefully as active aging which is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age. Growing adults can do a number of things to promote good health and prevent disease and injury. Healthy behaviours such as exercising regularly, good nutrition, and getting recommended health screenings can contribute to longer, healthier lives.

Exercise is one of the best ways Nigerians can prevent disease and injury. It reduces the risk of many negative health outcomes in growing adults, including early death (WHO, 2007), cardiovascular disease (Otinwa, 2014), stroke, diabetes, several forms of cancer, depression, cognitive decline and falls (CDC, 2012). Exercise reduces pain and improves function for those with arthritis and other chronic conditions. Physical activity at all ages can improve health and well-being, helping to reduce the likelihood of obesity and delaying functional decline and the onset of chronic diseases. It can also reduce the severity of disability associated with chronic diseases, improve mental health, promote social contracts, prolong independent living and reduce

the risk of falls (Seaward, 2009). Maintaining muscle strength and mass in growing adults helps to retain function and independence, weight management and to prevent injuries.

Good nutrition can also play a prominent role towards aging gracefully. Adequate and safe supply of food is required throughout the different life stages to maintain functional capacity and enable healthy aging (WHO, 2011). Adequate and good nutrition helps to combat communicable and non-communicable diseases which can hinder individuals towards aging gracefully (Adebayo, 2011).

A growth in the numbers of older people inevitably has brought an increase in the range and intensity of their problems and needs. Growing adults in Nigeria suffer a lot of hardship in an increasingly hostile, competitive and intolerant society (Ajomale, 2007). The inability of government to cope with the regular payment of salaries and pensions, the inadequate social services and health facilities to cater for the needs of an aging population, all pose new threats to the growing adult health. Therefore, the purpose of this paper is to examine the importance of good nutrition and exercise as reliable strategies in achieving productive and meaningful adults.

TYPICAL CHANGES WITH AGE AND ITS EFFECT

The body changes with aging in many ways which affect the function of both individual cell and organ systems. These changes occur little by little and progress inevitably overtime which can result in changes in function and in appearance. Besdine (2014) identified various changes in the body as a result of aging which includes the under listed as discussed.

Cardiovascular System

The heart muscles thicken with age and are not able to pump blood as efficiently as before especially in the absence of physical inactivity and nutrition (Francis, 2015). The heart and other valves around the heart need extra work to pump the required blood for effective functioning of the body. Blood vessels lose their elasticity and fat deposits build up around the walls of the arteries, causing arteriosclerosis overtime and sometimes high blood pressure is inevitable.

Skeletal System

Bones tend to become less dense. Thus, bones become weaker and more likely to break. In women, loss of bone density speeds up after menopause because less oestrogen is produced (Hill, 2011). Oestrogen helps to prevent too much bone from being broken down during the body's normal process of forming. Bones become less dense partly because they contain less calcium (which gives bones strength). The amount of calcium decreases because the body absorbs less calcium from foods. Also levels of vitamin which helps the body use calcium, decrease slightly. As a result, individuals may become more prone to fracture. Certain bones are weakened than others. Those most affected include the end of the thighbone (femur) at the hip, the ends of the arm bones (radius and ulna) at the wrist, and the bones of the spine (vertebrae).

Skin, muscles and body fat changes

Aging can be noticeably seen on skin which becomes less elastic and made fragile. The skin appears dry and wrinkled due to the decreased production of natural oil. Age spots can also occur

and how fast the skin ages depend on various factors like exposure to sun, dietary lifestyles, stress and infection. The amount of muscle tissue (muscle mass) and muscle strength tend to decrease; it begins around age 30 and continues throughout the person's life time. Regular exercise to strengthen muscle (resistance training) can partially overcome or significantly delay loss of muscle mass and strength. By age 75, the percentage of body fat typically doubles compared with what it was during young adulthood (CDC, 2005). Too much body fat can increase the risk of health problems such as hypertension (Hill, 2011). A healthy diet and regular exercise can help older people minimize increase in body fat.

Vision and hearing changes

As people age, the lens stiffen, making focusing on close objects harder. The pupils react more slowly to changes in light, the eyes produce less fluid, making them feel dry (CDC. 2011). This change in vision, called presbyopia, occurs because the lens and retina stiffens. Hearing loss is one of the most common conditions as one age due to the thickening of the ear drums which makes it difficult to hear sound of high intensity.

Nervous System

The number of nerve cells in the brain typically decreases with age. Levels of the chemical substances involved in sending messages in the brain change. Blood flow to the brain decreases because of the age-related changes in the brain which may function slightly less well, causing the memory to become less efficient (KIuff, 2012). Older people may react and do tasks somewhat more slowly, but given time, they do these things accurately. Some mental functions such as vocabulary, short term memory, the ability to learn new material, and the ability to recall words may be subtly reduced after age 70. Exercise and good nutrition can slow all these attributes if properly implemented and followed.

Sexual and Reproductive System

The effects of aging on sex hormone level are more obvious in women than in men. In women, most of these effects are related to menopause. When the levels of female hormones decrease dramatically, menstrual periods ends permanently. The decrease in female hormone levels causes the ovaries and uterus to shrink. The tissue of the vagina becomes thinner, drier, and less elastic (a condition called atropic vaginitis). In severe cases, these changes can lead to itching, bleeding and pain during intercourse. The breast becomes less firm and more fibrous and tends to sag (Health and Welfare. 2014). In men, changes in sex hormone levels are less sudden. Levels of the male hormone testosterone decrease, resulting in fewer sperm and a decreased sex drive (libido). Erectile dysfunction (impotence) become more common as men age and is often due to a disorder. usually a disorder that affects blood vessels or diabetes.

ENABLING HEALTHY AND GRACEFUL AGING

Aging gracefully depends on genetic, environmental and behavioural factors, as well as broader environmental and socio economic determinants. Some of these factors are within the control of the individual, usually referred to as lifestyle factors, while others are outside the individual's

control (WHO, 2015). Social determinants of health, such as income and education, influence the choices that individuals can make and create life circumstances, which limit or promote opportunities for good aging. WHO's active aging framework provides a useful model for understanding how social, personal and behavioural determinants interact with the physical environment and access to health services.

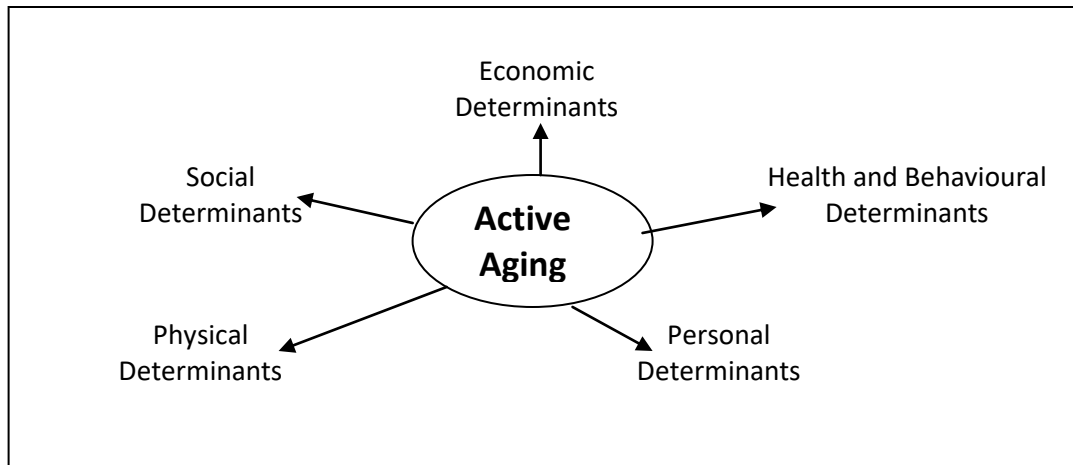


Figure 1: The Determinants of Active Aging: WHO (2015)

Gilbert (2012) also asserted that the following can help individuals towards aging gracefully: the pre exercise, interaction with family, friends and associates, good nutrition, health screening, going on hyperter vacation, safety issues and reading. Other determinants are:

- Health and social service system determinants such as health promotion and disease improve prevention, curative services, long term care and mental health services;
- Behavioural determinants such as reduction in tobacco use, physical activity, nutrition, oral health;
- Social determinants such as violence and abuse prevention, education;
- Physical determinants such as safety of home, clean water/air, safe foods, good housing;
- Personal determinants such as genetics and psychological factors 3.
- Economic determinants such as income, occupation and social protection.

EXERCISE AND AGING GRACEFULLY

The interaction of physical activity, exercise and physical fitness with health and biologic aging is complex and multifaceted, but there is general acknowledgment of its importance to major public health outcomes (American College of Sports Medicine, 2008). Stampfer et al. (2000) defined exercise as any bodily activity that enhances or maintains physical fitness and overall health and wellness. Flinch (2003) also defined exercise as series of activities that are planned and structured which involves duration, intensity and frequency aimed at improving well-being and promoting health.

The sedentary nature of modern man brought about as a result of technological innovations and advancement had exposed men to all manner of preventable and avoidable diseases and illness. Heart diseases and chronic diseases accounted for over 1.2 million deaths

per year (WHO, 2014). Being physically active plays an essential role in ensuring health and well-being. Exercise benefits many parts of the body such as the heart, skeletal muscles, bones, blood, the immune system and the nervous system (CDC, 2011) and can also reduce the risk factors for non-communicable diseases. These risk factors include: reducing blood pressure, improving blood cholesterol level ‘ and lowering body mass index (BMI). Physical inactivity is the fourth leading risk factor for global mortality (WHO. 2014). WHO also stated that physical inactivity is responsible for 6% of deaths globally and around 3.2 million deaths per year, including 2.6 million in low and middle income countries and 670,000 of these deaths are premature among the growing adults.

Table 1: Ranking of selected risk factors: 10 leading

Risk Factor	Deaths (Millions)	Percentage of Total
High blood pressure	7.5	12.8
Tobacco use	5.1	8.7
High blood glucose	3.4	5.8
Physical inactivity	3.2	5.5
Overweight and obesity	2.8	4.8
High cholesterol	2.6	4.5
Unsafe sex	2.4	4.0
Alcohol use	2.3	3.8
Underweight	2.2	3.8
Indoor smoke	2.0	3.3

Source: WHO (2014) Global Health Risk

BENEFITS OF EXERCISE

There are clearly many benefits that can be derived from participation in an exercise programme for the growing adult. It is well recognized that many deleterious physical and psychological conditions that commonly occur during aging can be prevented or delayed in asymptomatic persons with regular physical activity (Katan, 2010). Exercise has been linked to playing a role in the prevention of some cancers (Kravitz, 2010) as well as reduced risk to heart disease, hypertension, osteoporosis, obesity, type II diabetes, osteoarthritis and abnormal cholesterol (Barry & Eathrone, 2004). Improved strength also helps individuals function independently, with improved gait and bodily control. Additionally, exercise is associated with effective stress management, fewer sleep disorders, enlightened mental outlook, reduced loneliness, and lowered depression and anxiety (Adeyeye, 2012). Maria and Fiatrione (2004) also asserted that exercise can be of benefit in the following ways:

- It minimizes the physiologic changes associated with typical aging
- It contributes to psychological health and well-being
- It increases longevity and decreases the risk of chronic diseases
- It assists in the prevention and treatment of disability.

Table 2: Exercise versus Aging

		Effect of Aging	Effect of Exercise
1	Heart and circulation		
	Resting heart rate	Increase	Decrease
	Maximum heart rate	Decrease	Slows the decrease
	Maximum pumping capacity	Decrease	Increase
	Heart muscle stiffness	Increase	Decrease
	Blood pressure	increase	Decrease
2	Blood		
	Number of red blood cells	Decrease	No change
	Blood viscosity thickened	Increase	Decrease
3	Intestines		
	speed of emptying	Decrease	Increase
4	Bones		
	Calcium content and strength	Decrease	Increase
5	Muscles		
	Muscle mass and strength	Decrease	Increase
6	Metabolism		
	Metabolic rate	Decrease	Increase
	Body fat	Increase	Decrease
	Body sugar	Increase	Decrease
	Insulin level	Increase	Decrease
	Sex hormone level	Decrease	Slight decrease
7	Nervous system		
	Nerve condition and reflexes	Slower	Decrease
	Quality of sleep	Decrease	Increase
	Risk of depression	Increase	Decrease
	Memory lapses	Increase	Decrease

Source: Harvard Medical School (2014).

CATEGORIES OF EXERCISE

Exercises according to Health (2004), Stempfer et al. (2000) and Gleeson (2007) are generally grouped into four categories depending on the overall effect they have on the human body. These are: aerobic, strength, flexibility and balance.

- **Aerobic exercise** is any physical activity that uses large muscle groups and causes the body to use more oxygen than it would while resting. Aerobic or endurance exercise involves activities that increase breathing and heart rate. These activities help to keep the body healthy, improve fitness and help individuals to meet up with daily task. They also help to prevent or delay many diseases that are common in older adults (Otinwa, 2010). It involves physical activities that build endurance. It includes brisk walking, dancing, jogging, swimming, playing tennis biking etc.
- **Strength exercise** is any physical activity that increases the muscle and body strength, firmness and toning. It helps to improve bone strength, weight training, interval training and sprinting. It includes push- ups, lunges and biceps curls using dumb bells.
- **Balance exercise** helps to prevent falls - a common problem in older adults. Many lower body strength exercises also help to prevent balance. Exercises to improve balance include: standing on one foot, heel-to-toe walk.

- **Flexibility or stretching exercise** is another important part of overall fitness (Esan & Ornojola, 2015). It helps to improve joint flexibility and mobility which gives individuals freedom of movement for regular physical activity as well as for everyday activities. It includes shoulder and upper arm stretch, calf stretch, etc.

EXERCISE PRECAUTIONS

Exercise is wonderful for health but to get gain without pain, you must do it wisely. using restraint and judgment every step of the way. Before embarking on exercise, the following precautions must be taken into consideration:

- Check-up before you begin a moderate to vigorous exercise programme particularly if you are older than 40, if you have a medical problem, or if you have not exercised previously.
- Eat and drink appropriately. Don't eat for two hours before you exercise but drink plenty of water before, during and after exercise, particularly in warm weather.
- Warm up before you exercise and cool down afterward. Stroll before you walk and walk before you jog. Stretches and light aerobics are ideal warm-up and cool down activities.
- Dress simply, aiming for comfort, conveniences, and safety rather than styles.
- Exercise regularly unless you are ill or injured. Give yourself enough time to recover from injuries and illness. Remember that recovery may take longer as you age.
- Listen to your body. Learn warning signal of heart disease including chest pain or pressure, disproportionate shortness of breath, fatigue or sweating, erratic pulse. Do not ignore aches and pain that may signify injury.

NUTRITION AND AGING

Due to advancement in food technology, there has been influx of more genetically modified processed food in our society which predisposes human beings to all kinds of avoidable diseases such as cancer, obesity and cardiovascular diseases. Nutrition is a key factor to our future. It is a universal factor, which affects as much as it defines the health of all human beings (Gupta & Ghai, 2010). Nutrition has a powerful impact on maintaining health and preventing diseases. Nutrition is the process of providing or obtaining the food necessary for growth and development (Kravitz, 2012). The essential nutrients needed for optimal growth include carbohydrates, proteins and lipids (fats) as well as fibre, vitamins, minerals and water.

Good nutrition means getting the right amount of nutrients from healthy foods in the right combinations. As we age, the body organs also age and need good nutrition to keep it going and minerals are vegetables and fruits (WHO, 2011). Nutrition involves the utilization of food to grow, repair and maintain the body organs. Nutrition is one of the keys to developing and maintaining good health and is at work during our entire life cycle - from infancy to adolescence, adulthood and in senior years. Nutrition can serve as antidote for many of today's common problems such as stress, cardiovascular diseases, sexual vitality and diseases prevention (Katan, 2010).

NUTRITION NEEDS OF GROWING ADULTS

Carbohydrate consists of carbon, hydrogen and oxygen atoms. It includes monosaccharide (glucose, fructose and lactose), disaccharides, and polysaccharides (starch). About 60 percent of calories should come from carbohydrates, with emphasis on complex carbohydrates because it put less stress on the circulatory blood glucose. Food source of carbohydrate include rice, wheat, bread, yarn.

Fibre enhances dietary intake. Adequate fibre, together with adequate fluid, helps maintain normal bowel function. Fibre also helps to decrease risk of intestinal inflammation. Vegetables, fruits, grain products, cereals, seeds, legumes and nuts are all sources of dietary fibre. Protein is important for growing adults for the maintenance of the body and health. Adults over 50 years without kidney diseases or diabetes need about 1 to 1.5 grams per kilogram of body weights. It is important to vary your sources of protein instead of relying on red meat. Including more fish content in the diet is reasonable and may be the easiest way to cut calories and reduce weight. Fat from plant source, such as groundnut oil, palm oil, and coconut oil is better than the one gotten from animal source.

Water: Of the entire nutrients, water is the most important, serving many essential functions. Adequate water intake reduces stress on kidney function, which tends to decrease with age. Adequate fluid intake also eases constipation. With the aging process, the ability to detect thirst declines, so it is not advisable to wait to drink water until one is thirsty.

Vitamins and minerals are essential for body growth and development. They help to improve the body immune system; thereby making it difficult for the invasion of germs and microorganisms. The major food sources of vitamins

NUTRITION TIPS ON AGING GRACEFULLY

A balanced diet and choice of right foods and nutrients will reduce the aging effects. WHO (2004) recommends the following nutritional tips on aging gracefully:

- Fruits and bright coloured vegetables like carrots, pumpkin, tomato that have a potential anti-aging value and good source of anti-oxidants should be taken daily.
- Eat more fibre and calcium. Increase your fibre intake to prevent constipation.
- As kidneys gradually become less efficient in hydrating the body, make an effort to drink at least 6-8 glasses of water per day.
- Keep blood and body cholesterol levels low by limiting fat intake. Take more of poly-unsaturated fatty acids (soybean oil or corn oil) and mono-saturated fatty acids (olive oil, avocado oil, nut oil). Limit the intake of saturated fats (beef, pork, butter, cheese).
- Limit alcohol intake. Drinking alcohol can impair judgment and physical balance, which can lead to accident and injury.
- Replace salt with healthier flavourings. Too much sodium may worsen high blood pressure and increase the risk of stroke. Cook with garlic, onions and chillies.

CONCLUSION

Aging is inevitable, but it has an undeservedly fearsome reputation. No man can stop the clock, but most can slow its tick and enjoy life as they age with grace and vigour. Every man desires to

live to an advanced age, having a good physical health, positive mental outlook, being cognitively alert, having a good memory and being socially involved. All these can be achieved with number of activities to promote good health. Healthy behaviours such as exercising regularly, good nutrition and getting recommended health screening can contribute to longer and healthier lives.

Recommendations

To age gracefully using exercise and good nutrition as a parameter, the following recommendations are drawn:

- Individuals should involve in regular exercise and good nutrition; thus improving the chances of living longer and healthier.
- Health education, information and awareness on importance of exercise and nutrition as the key towards aging gracefully should be made available

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