



# Centenarians: Life Style for a Long Healthy Life

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## Contents

<b>Introduction</b> .....	2
<b>Centenarians Are the Fastest Growing Segment of the Population</b> .....	2
<b>Health Care Professionals Attitudes Towards Aging</b> .....	3
<b>Lifestyle Factors from the World's Blue Zones</b> .....	4
<b>Behavioral and Social Patterns of Centenarians in Traditional Cultures</b> .....	5
<b>Role of the Elements and Nature in Eastern Complementary Medicine</b> .....	5
<b>Health Literacy as Connection and Understanding of the Natural World</b> .....	6
<b>Common Factors: Centenarians from around the World</b> .....	6
Contagious Positive Attitude Regardless of Setbacks .....	6
No Fear of the Future, the Goals and Life Purpose of Centenarians .....	7
Healthy Mind and Body Exercises of Centenarians .....	7
Eating Habits of Centenarians .....	8
Traditional, Complementary, and Alternative Healing Practices of Centenarians .....	9
<b>Service, Gratitude, and Inclusion Contribute to Natural Feelings of Worthiness</b> .	9
<b>Patterns of Social Support and Extraversion Among Centenarians</b> .....	10

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The ideas contained in this article are for informational purpose only and not a substitute for consulting with your physician or other healthcare professionals and obtaining medical supervision as to any activity, procedure, or suggestions that might affect your health.

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<b>Spiritual Beliefs of Traditional Elders</b> .....	11
<b>Implications for Health Care Professionals Interested in Working with the Aging Population</b> .....	12
<b>Conclusion</b> .....	12
<b>Key Points</b> .....	12
<b>References</b> .....	13

### Abstract

The population is aging and the fastest growing group of older adults in the United States and the world are centenarians. This chapter reviews studies of centenarians in many regions of the world to find commonalities among this category of exceptionally long-lived individuals. Centenarians share many intersectional lifestyle characteristics that may contribute to their longevity. While it is difficult to prove causality for each lifestyle factor's influence on centenarians' extremely long life, many of the behaviors and social-environmental health determinants of centenarians can stand on their own as evidence-based complementary and alternative lifestyle practices. A growing body of evidence is showing that many of the same health behaviors of centenarians reduce the stress response, decrease incidence of chronic disease and contribute to longevity. Health care professionals can learn about the aging process and lifestyle factors that may contribute to longevity by studying centenarians.

### Keywords

Centenarians · Health span · Oldest of Old · Mindful Aging · Wellbeing · Longevity · Health Behavior · Successful Aging · Complementary Medicine · Alternative Medicine · Lifestyle

## Introduction

Longevity and health span are associated with successful aging (Rowe and Kahn 1987). This chapter will discuss the bio-psycho-social

lifestyle factors of centenarians and how current research and field studies can provide a more complete construction of aging and well-being. Centenarians field studies as research on centenarians and lifestyle practices of can complement the practice of Allopathic medicine. The twenty-first century is a time during which individuals in industrialized nations are reporting increasing stress. In addition, the explosive growth of the aging population in the United States and around the world calls for new methods of cost effective and evidence-based forms of stress reduction and lifestyle health habits. Research on practices such as mindful meditation, circadian medicine, and daily exercise are some of the many practices that many centenarians in diverse cultures grew up understanding to be a part of a well-balanced life. More than a summation of health and disease, aging takes on a significance for the oldest of old (over 85 years) that transcends ideas of physical health. Centenarians, especially from diverse cultures, often cite many simple mind body practices that are now being scientifically validated. This chapter explores the intersection of current knowledge on stress reduction with the qualitative words and wisdom of elders who have lived either 100 years or more.

## Centenarians Are the Fastest Growing Segment of the Population

Living to 100 years of age was once unusual. Centenarians are breaking the glass ceiling of aging. Living to 100 is becoming the hallmark of successful aging and will become more and more common in coming decades (Robine and Cabaynes 2017). By 2050, the number of

centenarians in the USA will increase more than any other age group. Recent US Census data (2019) indicates that there are close to 100,000 centenarians living in the United States, with a projected increase to 604,000 by the year 2060 (US Census 2019). Researchers have found that those who live a century or more share certain positive cross-cultural characteristics. This chapter explores the relationship between human longevity and lifestyle through the behavioral and psycho-social patterns of centenarians. Field studies of centenarians in traditional cultures around the world exhibit the efficacy of indigenous healing traditions (Nair 2007). Many of these lifestyle practices, such as meditation, yoga, gentle exercise, and social support have been adapted in various forms by populations around the world living in modern, urban environments. Lifestyle practices that have been passed on for many thousands of years in many traditional cultures are of interest to health care professionals. Many holistic and complementary lifestyle practices can complement allopathic medicine. Studies of the practices of centenarians around the world can facilitate health care professionals in guiding patients towards optimal ways of living in the twenty-first century. In a fast paced, modern world, forgotten cultural wisdom helps us slow down and enjoy life. Much of the simple wisdom expressed by traditional elders are particularly salient because many lifestyle factors are being validated by research as beneficial to health and longevity (Oberg et al. 2014).

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### **Health Care Professionals Attitudes Towards Aging**

Medical professionals' attitudes towards aging influence patients who come for care. As a first point of contact with older adults seeking health care, medical professionals will have the privilege of more interaction than other professions with centenarians and the oldest of old, adults over 85 years of age. Contact with centenarians and the oldest of old have the potential to help modern society to reframe the aging process as positive and worthy (Dugarova 2017). This chapter offers

a new perspective on aging and the value of a very long life, and how those that have lived a century or more can be our informed guides as the field of medicine comes to terms with unprecedented demographic shifts for an aging planet. Medical professionals will encounter an aging population during their career and need to understand what to expect, as well as understand the heterogeneity of this population. Learning from them will be a challenge, because they may sometimes require medical professionals to challenge previous beliefs about aging. Advances in medicine have made a tremendous difference in life expectancy, we can now take advantage of these advances and learn from the life and experience of our treasured elders. According to Jo Ann Jenkins (2017), the President of American Association of Retired Persons (Jenkins 2017) "we need to challenge outdated attitudes and stereotypes about aging. Research shows that our self-perceptions of aging influence not only how we age, but also our health status as we get older. More positive self-perceptions of aging are associated with living longer with less disability." Studies like the New England Centenarian Study, research in each of the five Blue Zones<sup>®</sup>, the Okinawa Study and the Georgia Centenarian Study have expanded our collective understanding of what it means to live to 100 years of age. Many more studies on centenarians and near centenarians examining life style, diet, and other factors reveal many similarities that may contribute to longevity. Genetic and environmental factors play an important part, but they are not the sole determinants of a long lifespan and health span. Confidence and determination seem to contribute to their resilience. Centenarians are proud of their cultural heritage, who they are and where they come from (Almenas-Velasco and Ortiz-Marín 2013).

In traditional societies, especially those that value the contribution and wisdom of older adults, centenarians thrive in an environment where they can express their value-based attitudes of positivity and optimism. The balance between agentic values and communal values seem most poignant for centenarians. Centenarians appreciate and value their own autonomy and freedom, yet also highly appraise their interdependence on family,

community, and environment. Near centenarians, age 95–99 show higher levels of life satisfaction, despite having more distress than younger counterparts age 70–90 years of age (Sydeny Centenarian study). Understanding the lifestyle factors that contribute to a long, healthy, and positive life have grown more salient with the surge in the population of centenarians worldwide and in the United States. In many traditional cultures, older adults are viewed with reverence. The traits that are shown to be important in allowing a person to live to be 100 years are wisdom, resilience, and optimism. What can we learn from those elders that have surpassed their 100th birthday?

For thousands of years, traditional and ancient practices have relied on the healing power of the environment and elements (De Mol van Otterloo et al. 2018). Centenarians in diverse culture live healthy lives and heal without depending exclusively on scientific methods. Our collective effort to highlight and close the gaps in disparities alongside researching, seeking alternative healing methods, and fully integrating the environment's healing power will allow us to understand that Earth's treasures are of immeasurable value and need to be consumed to give us an increasingly healthy life (Nair et al. 2018a; Nair and Sudan 2014).

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## Lifestyle Factors from the World's Blue Zones

Although centenarians live in all parts of the world and in every country, there are five geographic areas in the world known as Blue Zones<sup>®</sup> that have more certified centenarians than any other regions in the world. “By teaming up with National Geographic and the National Institute on Aging, Dan and his team, found the 5 demographically confirmed, geographically defined areas with the highest percentage of centenarians (Loma Linda, CA, USA; Nicoya, Costa Rica; Sardinia, Italy; Ikaria, Greece; Okinawa, Japan). These 5 areas were located using epidemiological data, statistics, birth certificates, and other research. These areas were dubbed *Blue Zones*, where people reach age 100 at 10 times greater

rates than in the United States” Frates et al. (2016).

The name Blue Zone<sup>®</sup> originated after demographers circled Sardinia, Italy with a blue pen, after validating that the area had an exceptional number of centenarians, 10 times the number per capita than in the United States (Zones 2019). All of the five Blue Zones<sup>®</sup>, except one, have been geographically isolated, allowing adults to grow old in a more traditional family and community supported setting. Many common social and geographic trends have been identified for the Blue Zones<sup>®</sup> suggesting that the commonalities between the regions and their inhabitant's lifestyle practices play a part in longevity. Adults in Blue Zones<sup>®</sup> generally are naturally physically active, rely on a traditional network of family and community support throughout the life course, eat a nutrient dense, mostly plant-based diet, and have habits and lifestyle factors that help them to relax more and let go of stress. The one Blue Zones<sup>®</sup> that is not geographically isolated is Loma Linda, California, a city widely populated by members of the seventh Day Adventist Church, a religious group that encourages many similar social and behavioral attributes to geographically isolated Blue Zones<sup>®</sup>. For example, seventh Day Adventists take a day of rest on Saturday to spend time with family and community. Followers of the religion adhere to a vegetarian diet and value physical health, a positive mental attitude, daily routine, and exercise. Other commonalities among the Blue Zones<sup>®</sup> are that people in the regions are physically active throughout the day without having to “work out.” On the Island of Sardinia, a Blue Zone<sup>®</sup> in Italy, men live longer than anywhere else on the planet and most work as shepherds, walking up to 5 miles per day over steep and rocky terrain (Blue Zones 2019). Beyond the Blue Zones<sup>®</sup> the psychosocial behavioral patterns and lifestyle factors of centenarians discussed in this chapter are taken from field studies, qualitative analysis, and other peer reviewed studies of centenarians around the world (Nair 2020). To live 100 years has been recognized as a remarkable feat by both modern and indigenous cultures and suggests a temporal transcendence

and unique outlook that only extreme longevity can provide (Toye et al. 2020).

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### **Behavioral and Social Patterns of Centenarians in Traditional Cultures**

In diverse cultures, elders and their practical wisdom are respected. Centenarians life style practices originate from a mixture of cultural influences passed on usual from cultural and familial lineage and spiritual beliefs (Nair 2020). Many of the lifestyle practices are similar to practices that are now being studied for their effects on human longevity. Centenarians in many cultures around the world have similar lifestyle factors like eating a nutrient-rich diet, diverse and consistent intergenerational social interactions, along with daily physical and mental exercise. The centenarians exhibit an attitude of optimism in their daily life. Most of them are constantly involved in physical (like walking, gardening, or cooking) or mental activity (like reading and memorizing). They eat a mostly plant-based diet, low-calorie diet regularly, but in small quantities. The centenarians report a belief “in something beyond what we know.” They pray daily, during different times of the day and believe in divinity. Meditation, yoga, and cold-water bathing are part of their daily rituals (Nair 2012).

A meta-analysis of qualitative studies of the oldest of old in a variety of countries illuminated some of the paradoxes of extreme longevity. Adults 85 and over who have lived a long life enjoy “living in the moment,” and at the same time “transcending” it. The paradox of living a long life seems to give them a capacity for understanding both the finite and the infinite (Toye et al. 2020). The oldest of old seem to have an ability to remain in the moment while retaining an enormous personal history and store of past memories. Embracing the duality of their independence and dependence, their desire for autonomy, along with their love for community. It’s worth noticing that “problems” faced by many aging adults are embraced and welcomed by centenarians in all cultures.

### **Role of the Elements and Nature in Eastern Complementary Medicine**

Many Eastern cultural health traditions central tenets involve the elements. Elemental balance is believed to be a critical factor in good physical and mental health. Elemental homeostasis, not only biological homeostasis, describes wellness of a whole person and their relationship with their physical and social environment in many forms of Eastern medicine such as Traditional Chinese Medicine and Ayurveda. Individuals and community practitioners determine what positive health determinants are present and which ones are lacking in an individual in both Ayurveda as well as Traditional Chinese Medicine. Both of these healing modalities are based on a multi-dimensional pattern of elements of earth, water, fire, air, and space in Ayurveda (Deveza 2013) and in Traditional Chinese Medicine, earth, fire, wood, metal, water. Eastern traditions offer different views of aging in which there is a natural regeneration and growth in each stage of life. Tao Porchon Lynch, a 101-year-old yoga teacher who was born in India and began practicing yoga at age 8 describes her experience of the regenerative power of nature and the elements. “One-hundred-year-old trees still recycle themselves and come out with new flowers. Recycle yourself. Know that nature gives you the clues to living” (Myles 2015). Adults of advanced age understand that their life is a part of an elemental cycle occurring in nature. This multidimensional philosophy gives confidence to many older adults by helping them to transcend a linear relationship to physical health. Health literacy in this context is dependent, not solely on the ability to read instructions and labels but to understand traditional concepts passed down for centuries.

Many centenarians cite a connection to nature that brings them balance. The healing traditions of India and China view the world through a multi-dimensional lens of the elements in which aging is not a negative occurrence, but a natural part of a larger cycle or pattern of nature and its elements. Dating back over 4000 years, Traditional Chinese Elements govern all of life from an individual’s biology, psychology, as well as socioenvironmental

factors (Benedict and Heller 1999). In both Ayurveda, traditional Indian medicine, as well as Traditional Chinese Medicine. The elements, earth, water, fire, air, and ether in Ayurveda and in TCM, earth, fire water, metal, and wood enhance personal understanding of the social determinants of health. A 3-day meeting was held in early December of 2019 to codify and standardize Ayurveda terminologies for health care professionals, medical students, and researchers. The World Health Organization as part of its global strategy to strengthen quality, safety, and effectiveness of traditional and complementary medicine (WHO 2019). Traditional and complementary medicine have become popular in the West because these models recommend lifestyle choices that balance the stressors and demands of modern living. Centenarians in traditional cultures demonstrate the wisdom of moderate living and healthy lifestyle choices that can contribute to a long life (Toye et al. 2020).

Traditional centenarians describe their relationship to nature as an important life theme (Nair 2017). The mental, emotional and physiological benefits of time in nature have been documented and will continued to be studied and evaluated by investigators (Keniger et al. 2013). Spending time in nature has particularly salient implications for the growing number of older adults who will inhabit urban areas in the next 30 years.

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### **Health Literacy as Connection and Understanding of the Natural World**

It is important to understand that health literacy has a different context in diverse traditional societies. Health literacy in indigenous cultures takes on other dimensions that influence wellness, the aging process and how the aging process has positive implications for society. In Western societies, health literacy is a key social determinant of health, yet is often framed in terms of interaction with medical care providers. Health literacy and health promotion are embedded in the cultures in which they arise. Medical professionals can learn from a broadened perspective of the concepts of health literacy and health promotion. The World

Health Organization says “Health promotion enables people to increase control over their own health. It covers a wide range of social and environmental interventions that are designed to benefit and protect individual people’s health and quality of life by addressing and preventing the root causes of ill health, not just focusing on treatment and cure.” (WHO 2016) In this context indigenous and complementary forms of medicine can help in their cultures of origin and they can help guide modern practitioners to health promotion that validates one’s own agency and interdependence on their environment.

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### **Common Factors: Centenarians from around the World**

#### **Contagious Positive Attitude Regardless of Setbacks**

Leading a stress free life style is very much a part of centenarians’ day to day activities. Every single one of our field study subjects exhibited an attitude of optimism in their interviews. This joyful demeanor was visible in both their verbal and nonverbal communication with people around them. The centenarians in our field studies were constantly smiling. They are happy with their life and are hopeful about the future. Others may report negative events in the centenarians’ life, such as the death of a family member or illness, financial difficulties, or other challenges; however, the centenarians have a tendency not to dwell on misfortune but to bounce back from difficult situations very quickly. Long-term mourning is hardly ever seen among these individuals. They tend to develop positive outlooks in negative situations, one of the paradoxes constantly cited in field studies and other research on the character traits of centenarians around the world (Kato et al. 2016). Moreover, their positive attitude is contagious among the people they associate with on a daily basis. If centenarians come across people that are pessimistic in their outlook, first they try to persuade them to positive way of thinking; if they are not successful, they tend to avoid negative personalities in a nonspecific

pattern of exclusion from their close categories of contacts. Keeping a youthful attitude has a lot to do with their life style and independence. They do not want to be dependent on others. Every day they wake up in the morning with a new set of goals to accomplish. Researchers analyzing data from the Chinese Longitudinal Healthy Longevity Study found that centenarians, when compared to younger counterparts felt less “useless” (Zhao et al. 2018). This research further suggests that internalized beliefs about aging and one’s perceived contributions influence longevity (Zhao et al. 2018). Traditional cultures may have an advantage over Industrialized nations where negative attitudes about aging exist and can be internalized. Traditional cultures veneration for longevity and the wisdom of elders may be a factor that contributes to elders’ positive attitude and ultimately to their longevity. Health care professionals can help challenge common explicit as well as implicit perceptions of aging (Toye et al. 2020).

### **No Fear of the Future, the Goals and Life Purpose of Centenarians**

Centenarians generally have a strong sense of purpose or *ikigai*, a Japanese word that means reason for living (Hutnik et al. 2012). Some are peace activists, some enjoy bowling or volunteering at the library. Participating in activities that enhance their life affirms the idea that older adults will age successfully when they choose to participate in enjoyable activities that they can optimize against the natural cognitive and physical decline that comes with normal aging. Some examples of healthy activities are playing a musical instrument, dancing, cooking, or gardening. Using the senses, sight, hearing, taste, touch in daily activities has been shown increase neurogenesis and prevent cognitive decline. Centenarians’ and near-centenarians’ daily activities help them contribute to their community and feel a sense of purpose. Some may volunteer for a worthy cause or help out in small, but meaningful ways or engage in larger projects. One British centenarian turned his yard in Cardiff for a neighborhood playground for young

children and teenagers (Hutnik et al. 2012). In Okinawa, Japan, centenarians report their *ikigai* in simple terms. “Getting together with my friends is my most important *ikigai*. We all get together here and talk-it’s very important. . . that’s one of my favorite things in life.” “I plant my own vegetables and that’s my *ikigai*” (Garcia and Miralles 2017). Something that might be surprising to those unfamiliar with the attitudes of centenarians is their perspective on the future and their continued habit of goal setting (Freeman et al. 2013).

### **Healthy Mind and Body Exercises of Centenarians**

Poor and rich alike, the centenarians studied were constantly actively participating in a variety of pursuits, from the time they get up in the morning until they are ready to go to bed. They keep themselves physically and mentally active daily. There is nothing called “boring” in their daily routine. You never see them sitting in one place for an extended period of time. Moving around is very much a part of their lifestyle. They project a lot of positive energy to others as well. They are always doing something such as cleaning the place around them, walking, gardening, cooking, sight-seeing etc. Sometimes to an outsider, their activities may not look productive. As previously mentioned, centenarians display a healthy balance of independence and interdependence. Many enjoy cooking their own meals gardening and housecleaning. The centenarians enjoy demonstrating to their active lifestyles to others, knowing that their example helps those they come into contact with expand their own understanding of one’s capacity to age successfully.

One of the most important evidence-based contributors to a healthy life, physical activity is recognized as a priority for healthy aging in scientific literature. Most research conducted in this area is about the impact of physical activity on physical health, cognitive health and the reduction of disease. Being physically active on a consistent basis is proven to add years to a person’s life (Rizzuto and Fratiglioni 2014). Now that human beings are living longer than ever before, more

research is being done to understand the impacts of remaining active on the older populations (Chodzko-Zajko 2014). Centenarians are physically active, doing exercise that is an enjoyable or part of their daily routine (Freeman et al. 2013).

Physical activity can contribute to living a higher quality of life but is not the most critical component of longevity (Pinker 2017). In fact, in some of the literature, the amount a person exercises on a regular basis is fairly low on the list of contributing factors to a long life (Pinker 2017). Despite the evidence that being physically active is not the most important factor to longevity, the health benefits are undeniable. And usually those who engage in physical activity throughout their lives live longer, and therefore seem to maintain some level of physicality into old age (Rizzuto and Fratiglioni 2014). Older adults who survive into their nineties with high life satisfaction seem to continue a level of cleaning, gardening, cooking, or other activities that suggest a certain level of independence. This trend indicates that physicality is not what creates optimal wellbeing, but rather the ability to remain active enough to maintain independence. When asked qualitatively what helps people live longer and happier lives, older adults have stated that being active in their everyday lives has been a main contributing factor (Troutman-Jordan and Staples 2014).

Another habit of those who live to old age includes maintaining an active mind. Those who live the longest tend to maintain a regular practice of using the mind for various challenging activities of both memory and leisure. Among Polish centenarians, even those who exhibited difficulties remaining physically active, they made sure to engage in mentally active activities (Mackowicz and Wnek-Gozdek 2017). There is a gap in the literature that examines the mental habits of those who are 90 years of age or older. Although many have cited their desire to continue using their problem-solving skills and mental capacities to engage with the world and feel a sense of purpose. Older adults when surveyed describe positive perspective on life and aging as well as good coping skills have contributed to their longevity (Troutman-Jordan and Staples 2014).

To stay alert mentally, they are involved in reading, writing, memorization, etc. For example, several of them are constantly learn new things. Centenarians remain engaged in activities that were enjoyable and that helped them to continue to take care of themselves (Freeman et al. 2013). Sometimes simple things such as memorizing telephone numbers, birthdates, special event dates, or several poems and short stories. While older adults decline in fluid intelligence, crystallized intelligence remains relatively stable and as whole centenarians have much lower rates of cognitive impairment (Jopp et al. 2016).

### **Eating Habits of Centenarians**

A large number of the centenarians studied are vegetarians (Nair 2007). They consume freshly harvested vegetables and fruits. Sprouted foods are common in their diet (Nair 2007). Centenarians in traditional cultures can easily identify vegetables and fruits with healing qualities and seldom eat refrigerated items (Nair 2018b). A study of Italian centenarians validated the importance of healing foods. High plasma levels of both Vitamin A and E were found in the blood of 153 centenarians in Italy (Polidori et al. 2007). Daily mealtimes are consistent for centenarians. Every day they eat at the same times, regularly and in little quantities (Nair et al. 2010). They seem to understand both implicitly and explicitly that what they consume will affect their health and wellbeing. No one is able to tempt them with larger portions, even when they are offered their favorite food. Meals and nourishment are taken seriously. They do not involve themselves in lengthy conversation while eating, silence is preferred (Nyahunda et al. 2017). Eating slowly and concentrating is very much a part of their routine. For instance, they say “each time you put food in the mouth we need to chew it thirty-two times, one for each tooth.” (Nair et al. 2010). The centenarians consume large quantities of water, surprisingly warm water, boiled with herbal seeds such as cumin. Water is avoided at mealtime for better digestion. Although the aging process negatively affects one sense of thirst and satiety, traditional



practices concur with Western medical recommendations (Kenney et al. 2001). Older adults in Industrialized society need to be educated on the importance of rehydration and its positive health benefits, especially after exertion or exposure to warm temperatures (Kenney et al. 2001). Several types of spices and herbs are part of the traditional elders' diet. Even when they are traveling, they insist on eating at their regular times. Their schedules are consistent and they make it a point of not to sleep or lie down at least 2 h after they eat. Proper digestion and meal spacing come naturally to these older adults.

The eating habits of those who live to a very old age are of great importance for future scientific inquiry as dietary habits are considered extremely influential in overall health. Both the quality and quantity of food are important factors that contribute to an older adult's strength and longevity (Lorenzo-López et al. 2017). Although diet is sometimes cited as one of the most important contributors to health overall, some research has pointed to adequate nutrition as being most important (Li et al. 2014). In other words, maintaining a regularly nutritious diet rich in fruits and vegetables is important, but being overly restrictive with sugar or fat is not indicative of a long and healthy life (Li et al. 2014). This follows the evidence that being overweight contributes to disease and dying before reaching old age (Rizzuto and Fratiglioni 2014) and can be reasons that those who are approaching 100 years of age have fairly consistent healthy dietary habits.

### **Traditional, Complementary, and Alternative Healing Practices of Centenarians**

The centenarians are very proud to identify their traditional healing practices as one of the main secrets of their longevity. Practicing naturopathy and yoga, as well as consuming herbs and spices are identified as some of the traditional healing practices adhered to by centenarians (Nair 2017). For example, most of these elders wake up in the morning at least 1 h before sun rise and engage in a practice called "sun gazing." Early morning

walking, meditation, breathing exercises, cold water bathing, and other practices are part of their daily rituals (Nair 2018a). As previously mentioned, long-lived older adults follow a pattern of eating and sleep that seems to mirror that of how our ancestors lived without electricity. These patterns of living life according to a diurnal clock are now being validated for their health promoting benefits. Satchin Panda, a circadian biologist, studies the biological mechanisms that synchronize the human body to the diurnal and seasonal cycles of time. Panda cites his inspiration in the divergent health outcomes between his maternal grandfather who kept very odd hours and his paternal grandfather who worked as a farmer. His maternal grandfather did shift work for the Indian railroad and was diagnosed with dementia and passed away when he was in his 70s. His paternal grandfather was a farmer who kept to a diurnal daily schedule because he lacked electricity. He enjoyed a long health span and lifespan, living well into his 90s. Panda heads a lab at the Salk Institute where he studies the underlying biological mechanisms of circadian rhythm and their effects on health (Salk Institute 2019). Centenarians that live in traditional cultures often speak about their daily routines and adhere to a strict daily cycle throughout their lives. The molecular basis of circadian rhythm and its link to optimal health (Panda 2018) validates the healing wisdom of Ayurveda and other indigenous cultures who abide by adherence to daily routine. Many centenarians have lived without electricity, either early in life or because of their geographic isolation and adapted early on to a natural diurnal sleep/wake and eating cycle that is known to support healthy human biological function and diurnal daily rhythms (Panda 2018).

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### **Service, Gratitude, and Inclusion Contribute to Natural Feelings of Worthiness**

Doing good things for others is an imperative enterprise for centenarians. Instead of expecting anything in return, they are always eager to assist others, relatives, friends, or even strangers (Nair et

al. 2010). Giving advice and sharing stories of their positive life styles to others are part of their daily routine. It is part of the traditions to respect the elders. These elders, even if others are not seeking anything, young and old alike, receive advice on diverse aspects of things such as: interpersonal relationships, dietary habits, financial security, spirituality, etc. Neighbors invite the senior most elders among their midst to birthdays, marriages, birth of new babies, and other happy occasions. Receiving blessings from these elders are seen with great pride. People bow in front of these elders by keeping their hands together and touching the feet of the elders' as a blessing. Their "acquired wisdom" is highly honored. Some of the other characteristic features include: they laugh or smile at all times, they are very friendly, they behave like children, they develop good support networks and extended family members and friends visit them often. There is a high number of well-wishers surrounding these centenarians. These elders love interacting and giving answers to all questions they are asked. They insist it comes with their "practice wisdom."

When measured Ashkenazi centenarians and near centenarians have consistently scored higher in conscientiousness, extraversion, and agreeableness and low in neuroticism (Andersen et al. 2013). Georgia centenarians also scored low on neuroticism and high competence, trust, and extraversion (Martin et al. 2006). Swedish centenarians were calm, responsible, and seemed to have above average levels of emotional regulation (Samuelsson et al. 1997). These personality measurements have been shown to be consistent with individuals who have lower incidence of mortality and chronic disease and suggest that high measures of personality traits of competence and sociability, along with low neuroticism may be a contributing factor in longevity, especially for centenarians. Many centenarians report that they try not or do not worry much about things they cannot control.

Generally, centenarians feel that their locus of control comes from within and that life opportunities can be optimized no matter how advanced in age (Freeman et al. 2013). Many centenarians live by the adage of controlling what they can and then

letting go of fear and worry around circumstances that are beyond their control. Overcoming difficulties is part of growing older; however, the hopeful and confident attitudes that centenarians express despite facing great challenges demonstrates their resilience. Across cultures, centenarians, regardless of socioeconomic status or country of origin all seem to demonstrate formidable resilience despite their circumstances. Centenarians face challenges but seem to meet them with fortitude suggesting a correlation between resilience and reaching the age of 100 (Jopp et al. 2016; Gu and Feng 2018). While physicians are reluctant to take on more responsibilities like learning about a patient's life history or familial or social environment, current research validates that health care outcomes for the oldest of old are contingent upon being heard and understood (Butcher 2018). Centenarians either grow up and live their adult life in traditional cultures that have encouraged positive social determinants of health, such as strong and supportive family ties, community support, nutritional food, and other environmental and lifestyle factors that support longevity. Many traditional cultures have reinforced positive social determinants of health.

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### **Patterns of Social Support and Extraversion Among Centenarians**

Feeling comfortable and friendly with others, including strangers is a characteristic of centenarians. They feel comfortable socializing with people of different age groups. Intergenerational relationships hold great importance for centenarians who understand that exchanges with young people help them to stay connected to the present and understand the future (Nair 2018c). Intergenerational relationships present an opportunity to experience positive transactions of social support. Young people and older adults often enjoy swap stories, smiles and connection (Fair and Delaplane 2015). Young people that have not grown up in traditional cultures where older adults are respected seem to understand differences in older adults, but do not judge them in ways that may be prevalent in modern terms. Children are

naturally non ageist and understand the reciprocal nature of interacting with older adults (Fair and Delaplahe 2015).

Centenarians try to keep up to date on what is happening locally, nationally, and even internationally. They are always willing to learn new things. Interacting with children and teenagers, by telling them oral histories and participating in outdoor activities are an integral part of their life styles. They never feel shy and are always seen as extravert in their interaction with others. They are willing to express their feelings very freely to others. Physical or mental limitations of these elders do not make them “slow-down.”

The impact of social relationships on successful aging is enormous. In much of the literature, having positive social engagement and interaction as well as strong relationships are the highest predictor of living a long life (Pinker 2017). When asked directly, centenarians have stated that social relationships were one of the most important aspects of their life, even before health (Mackowicz and Wnek-Gozdek). There are several different lifestyle habits that increase socialization, including attending events, maintaining close connection with family members, and engaging in a faith community. Being a part of social activities and events can contribute positively to longevity (Rizzuto and Fratiglioni 2014). Most, if not all, centenarians studied that have aged successfully, have maintained close ties to family and friends (Scelzo et al. 2018). Moving through the day engaging with others and fostering strong connections has led older adults to create positive and meaningful relationships into old age that have actually helped them live longer (Nair 2018c).

Along with positivity, feelings of belonging and self-worth are highly correlated with living to old age. Some activities that contribute to these feelings are volunteering and being an active mentor in the community or family (Baek et al. 2016). Being useful and having a sense of purpose contributes to feelings of self-worth and longevity, and intergenerational programs have shown to increase wellbeing for participants. Involvement in such programs mimics the more traditional collective cultures in which older adults are

valued and highly revered, thus providing both socialization and a sense of worth (Teater 2016). This sense of purpose can be seen as a psychological resource, contributing to overall wellbeing and thus an increase in the probability of a long and happy life (Windsor et al. 2015). Most of the healthy centenarians are never lonely or stay alone for extended periods of time – however, they do seek and enjoy solitude.

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## Spiritual Beliefs of Traditional Elders

“Believe in something beyond what you know” is very common among this group. Every day when they wake up, before their meal, before involvement in any auspicious occasions, and before going to sleep, they take few minutes of their time to pray. They believe in some form of “divinity” which is not known to human beings. Equating their secrets of long life to someone “divine” is commonly expressed (Nair 2018b). They are willing to share the concept of spirituality to others.

Feeling spiritually connected is often related to socialization but has also proved to be beneficial and impactful for healthy aging. Spirituality and faith have given people a way to connect with others, which has previously demonstrated to be critical in aging well (Mattoo et al. 2018). However, the recognition of the divine and something greater than oneself has documented positive effects on growing old well. This connection to a higher power and a strong faith guides people through adversity and obstacles, leading to a more positive and forgiving outlook on life (Mattoo et al. 2018). For many people over the age of 90, feeling closely tied to religion is what has helped them live so long (Scelzo et al. 2018). In addition, the majority of centenarians surveyed cited that a “deep and authentic faith” was paramount to both reaching old age and maintaining their wellbeing (Mackowicz and Wnek-Gozdek 2017).

While physicians may feel reluctant to take on more responsibilities such as learning about a patient’s life history or current familial or social environment, current research validates the that health care outcomes are contingent upon the

right social determinants of health (Butcher 2018). Centenarians either grow up and live their adult life in traditional cultures that manage positive social determinants of health and have been lucky in having supportive family ties, social support, and or the benefits of good housing, nutritional food, and other environmental factors which have supported good health and healthy habits throughout life. Many traditional cultures have reinforced positive social determinants of health and qualitative psychological and social factors that support longevity. Health care professionals stand to gain wisdom and value from interacting from older adults, especially the oldest of old in coming decades.

These factors, including the cross cultural understanding of healthy life styles are essential for the helping professionals working with all age groups, especially with the elders.

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### **Implications for Health Care Professionals Interested in Working with the Aging Population**

Working with older adults, especially centenarians offers a rewarding experience for those in the medical professions. Health care professionals can support older adults by understanding commonalities and recognizing the heterogeneity of the unique population of those who have lived over a century. Living long and being in good health is a remarkable achievement, known as successful aging XE “Successful aging”. Qualitative research indicates that centenarians who are cognitively healthy have many stories to tell and retain a unique personality, a combination of their own psychological traits, and the life experience of extreme longevity. Perhaps this is why cultures all over the world celebrate the 100th birthday of their residences with great honor. Health professionals can support the vast acquired wisdom of these elders and support their positive mental and physical health. Centenarians can help those in healthcare learn to value psychosocial traits that may not be associated with modern perceptions of success, but are associated with successful aging. The rewards of serving older adults are many,

health care professionals can benefit from learning from the acquired wisdom of the oldest. Centenarians from around the world exhibit human paradox of being both incredible strong (living through so many challenges) and vulnerable at the same time. The resilience of the oldest of old reminds medical students not to forget the capacity of the intangible force of the human spirit, the life affirming drive to survive that helps us all to affirm what is truly most important.

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### **Conclusion**

In coming decades, medical professionals are in a unique position to support and assist the population to successfully age. The study of centenarians and their lifestyle practices across the lifespan can contribute to the body of knowledge on aging. Centenarians in the Blue Zones<sup>®</sup> and those from traditional indigenous cultures provide a window into a form of a health literacy and health behavior that has been forgotten, simple common sense practices that help people to reduce stress and increase access to social support. While we don’t know exactly how all of these lifestyle factors specifically affect our biology and increase longevity, we know that they do no harm (Lavretsky 2017). In fact, many of the practices, daily exercise, consuming a nutrient dense diet, meditating, spending time in nature, and choosing a positive mindset have been shown on their own to be efficacious in reducing stress and incidence of chronic disease. Further studies on centenarians are needed and anticipated as their numbers continue to grow exponentially.

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### **Key Points**

- Centenarians are the fastest growing group over age 65 in the United States and the world. There will be over half a million centenarians by the year 2060.
- The Blue Zones are places where a higher concentration of centenarians live. These five regions are either geographically or socially

isolated indicating that traditional practices play a role in longevity.

- Nature and the elements play an important role in many indigenous health traditions and can inform complementary and alternative concepts about health literacy and health promotion.
- Centenarians generally have extraverted personalities, an optimistic attitude, and a positive view on aging, despite setbacks and challenges.
- Centenarians have daily routine that is similar to how people lived before having electricity, rising early in the morning, eating a nutrient-dense diet, and getting plenty of exercise without going to a “gym.”
- Despite their advanced age, centenarians set goals and live in the present. They enjoy intergenerational relationships in which they exchange stories and wisdom with younger counterparts.

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## **Informative Websites Pertinent to Centenarians**

### **The Okinawa Centenarian Study: Evidence based gerontology**

Okinawa Research Center for Longevity Sciences: Evidence based gerontology. <https://orcls.org/>.  
World's longest life expectancy, health, successful aging due to lifestyle. [www.okinawaprogram.com/study](http://www.okinawaprogram.com/study).

### **New England Centenarian Study**

National Geographic: Five "Blue Zones" Where the World's Healthiest People Live". These cultures have uncovered the secrets of longevity. <https://www.nationalgeographic.com/books/features/5-blue-zones-where-the-worlds-healthiest-people-live/>

New England Centenarian Study: Why Study Centenarians? An overview A model of Aging Wel. <https://www.bumc.bu.edu/centenarian/overview/>

The New England Centenarian Study's mission is to study centenarians who we believe carry the secrets to successful aging and how to delay or even escape . . . [www.bumc.bu.edu/Dept/Home.aspx?DepartmentID=361](http://www.bumc.bu.edu/Dept/Home.aspx?DepartmentID=361)

### **The Georgia Centenarian Study**

University of Georgia Gerontology Center research on the conditions and needs of those who reach the age of 100 and beyond. Publications: <http://www.geron.uga.edu/research/Publications.php>