

Applying Lessons from the Blue Zones on Campus: How Environment Impacts Health

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ABSTRACT

The *Blue Zones*, locations with exceptionally high longevity, are enviable places to reside as many residents live long, healthy lives. Similarities exist between the Blue Zones regarding the residents' behaviors and environmental conditions. These similarities, specifically related to physical activity, nutrition, and social connection, among others, promote a culture of wellness. Universities are a unique location in which a culture of wellness, designed specifically based on lessons from the Blue Zones, may be infused to promote well-being. Using the socioecological model, strategies can be implemented to mimic the Blue Zones on a college campus. For example, emphasizing education on health and wellness at the individual level, facilitating community around wellness at the interpersonal level, improving campus walkability at the community level, and advocating for on-campus dining options that are enjoyable and nutritious at the policy level would benefit students, faculty, and staff. Academic communities could benefit from implementing the recommendations provided. Collecting data on the impact is critical so that benefits may be evaluated, and information shared.

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BACKGROUND

There are many strategies that can be used to prolong lifespan. However, a more important outcome is prolonging health span. Health span refers to “the period of life spent in good health, free from the chronic diseases and disabilities of aging” (Kaeberlein, 2018, p. 361). One approach to improving health span begins with learning from



those who have achieved the enviable outcome of aging well. Blue Zones are longevity hotspots. The first Blue Zone, an area in mountains of Sardinia, Italy, was identified by Gianna Pes, M.D., Ph.D., an expert in medical statistics, and Michel Poulain, Ph.D., a demographer. While on their search for the specific blue zone location, a blue pen was used to mark the area or zone with exceptional longevity, leading to the name *Blue Zone* (Poulain et al., 2013). Since that initial discovery of the Sardinian Blue Zone, other Blue Zones have been identified and include the Nicoya Peninsula of Costa Rica, the island of Ikaria, Greece, the island of Okinawa, Japan, and Loma Linda, California (Buettner & Skemp, 2016). A Blue Zone is specifically defined as “a rather limited and homogenous geographical area where the population shares the same lifestyle and environment and its longevity has been proved to be exceptionally high” (Poulain et al., 2013, p. 89). Blue Zone residents have historically reached the age of 100 at rates 10 times higher than the U.S. average. In addition, Blue Zone residents are living their later years with fewer chronic and degenerative conditions and maintaining functional independence (Buettner & Skemp, 2016). The environmental conditions and culture that has formed have led to Blue Zone residents practicing healthy behaviors, sometimes out of necessity and often unintentionally. Healthy behaviors are infused within their lifestyle and are the easy, convenient choice.

The discovery of the Blue Zones has led to researchers investigating behaviors of residents and environmental factors which may be responsible for this unique phenomenon, as well as looking for similarities between the locations. Indeed, residents in the Blue Zones share many behaviors and environmental conditions which play an influential role in their ability to age successfully. Specifically, Buettner and Skemp have identified a number of characteristics shared by the Blue Zones residents which are likely responsible for the increase in both lifespan and health span. These characteristics include residents obtaining regular physical activity, eating well, having a sense of purpose, managing stress, and prioritizing friends and family, among others (Buettner & Skemp, 2016).

There is substantial, overwhelming evidence supporting the benefits of being physically active for health and well-being (Mahindru et al., 2023; Powell et al., 2011). These Blue Zone locations are known for residents who move naturally as part of their daily lives and therefore receive the health benefits of doing so. Blue zone residents are generally physically active throughout their daily lives. This consistent low to moderate intensity physical activity involves gardening, walking from place to place, and performing manual labor (Buettner & Skemp, 2016).

Additionally, the Blue Zones of Sardinia and Ikaria are both mountainous. Residents of these two Blue Zones consistently walk on uneven and oftentimes steep terrain, enhancing the benefits of moving naturally. In Okinawa, Japan, the terrain is not mountainous, but it is common for residents to spend time seated on the floor rather than in chairs. The action of getting up off of the floor improves mobility and muscular strength compared to sitting in a traditional chair. Residents in the Nicoya Peninsula of Costa Rica are consistently exposed to high heat and humidity, which are thought to have health benefits due to the increased cardiovascular demand (Mahindru et al., 2023; Powell et al., 2011).

Although the various Blue Zones have unique diets in a micro level based on plants that grow locally as well as tradition, there are similarities in diet across the Blue Zones. For example, no matter the Blue Zone, most calories come from local, fresh food, primarily from plant-based sources. Residents consume little processed foods (Buettner & Skemp, 2016). Research shows that a plant-based diet reduces the risk of many non-communicable diseases such as type 2 diabetes, cardiovascular disease, cancer, and dementia and reduces the risk of all-cause mortality (DeClercq et al., 2022; Kesse-Guyot et al., 2012; Kim et al., 2019; McMacken & Shah, 2017).

Blue Zone residents prioritize behaviors that reduce stress. Their connection to family and friends is strong and they have a sense of purpose and belonging (Buettner & Skemp, 2016). Chronic exposure to stress has numerous detrimental effects physiologically and psychologically, such as impaired cognition, increased anxiety, and impaired immune function (McEwen, 2017). Chronic stress leads to an increase in allostatic load, or damage resulting from stress. This damage often precedes the development of non-communicable diseases, which are responsible for most deaths worldwide (Fricchione, 2018).

AIM

The majority of college students are transitioning into adulthood. Research shows that this transition is marked by a decline in healthy behaviors, as evidenced by poor sleeping patterns, inconsistent and unhealthy eating habits, reduced physical activity levels, weight gain, and engaging in risky behaviors (Frech, 2012; Racette et al., 2008; Stok et al., 2018; Vella-Zarb & Elgar, 2009; Wang & Bíró, 2021). This transition to adulthood is also a time of greater independence, which provides a window of opportunity to enhance healthy behaviors. It is during this time that young adults begin to cement habits that will last a lifetime. A university campus provides an environment in which to implement characteristics of the Blue Zones and, as in the Blue Zones, make the healthy choice the easiest choice. In fact, several cities across the United States have utilized a Blue Zone model which utilizes strategies related to manipulating the environment and facilitating behavior change to improve the health of residents (Marston et al., 2021; Riddell, 2016). On a smaller scale, environmental conditions and intentionally facilitating behavior change could be a strategy utilized on college campuses to enhance the well-being of the college community.

The socioecological model (SEM) was developed by Urie Bronfenbrenner in the 1970s to identify influences on individuals. Specifically, when considering health, an individual's specific characteristics, the community in which they reside, and the environment all play a role (Bronfenbrenner, 1977). The SEM approach has been used to understand and promote health in many different circumstances (Caperon et al., 2022; Lisnyj et al., 2021). By utilizing SEM, the Blue Zones' characteristics may be infused into a campus community with the goal of improving the health and well-being of college students as well as faculty and staff.

IMPLEMENTATION

SEM provides a framework to infuse a campus with easy and convenient options from which students, faculty, and staff may learn about health and wellness and make healthy choices that will ideally serve them throughout their life. These recommendations, from the individual to policy level, require extensive effort among faculty and staff. In addition, there is overlap among the SEM levels, for example, a community level change that includes adding walking paths and offering mindfulness courses will benefit individuals within the community, may improve interpersonal connections, and may lead to a cohesive culture where wellness is celebrated.

Individual Level

Universities should strive to offer opportunities for individual students to learn about and participate in behaviors that improve health. At the individual level, it is recommended that all students be provided with education concerning the importance of physical activity and other factors related to wellness. Ideally, all students should take a course on wellness and physical activity, preferably in their first year when they are transitioning to adulthood. Additional workshops on topics, such as the benefits of physical activity, how to make nutritious food choices, and intuitive eating, may change behaviors for the better and lead to positive short- and long-term health outcomes. The university must provide students with convenient, enjoyable, and nutritious food options. The nutritious options should be the most convenient option for the fast-paced college campus lifestyle.

Stress is another factor that has a significant impact on the campus community. Education and interventions aimed at stress management is important for students as well as faculty and staff to reduce the short- and long-term negative impacts of stress. University students are seeking education and experiences which can help them identify their passion and future career aspirations. Programs and resources should be provided to facilitate student identification of their professional purpose. For example, if students are leaning towards a career in a health field, pre-health coaching can provide resources for students to help them identify their specific career of choice within the health field and take the necessary steps to reach that goal. This may include providing detailed information on what a specific career entails, as well as courses and other requirements needed to pursue that career. Additionally, students would benefit from being involved in activities outside of the traditional classroom. Providing ample opportunities for student involvement in peer mentoring, student advisory groups, community volunteer work, and leadership roles can benefit students during and after their college careers.

Interpersonal Level

Universities should strive to offer opportunities for members of the campus community to interact in healthy ways. The interpersonal level should focus on strategies and events which bring members of the campus community together to partake in healthy behaviors, feel connected, and establish beneficial relationships. For example, physical activity and wellness classes can bring students with similar interests into the same classroom. An effort to connect these students and nudge them to be physically active together, outside of class, may lead to creating friendships based on healthy behaviors and overlapping interests.

Similarly, intentional communal dining experiences which offer an educational component, such as information on where the food was grown, how it was prepared, and its nutritional benefit, would serve students, faculty, and staff. This dining experience could also be used to teach how to eat intuitively, a practice of the Blue Zones.

Showcasing groups and clubs across campus throughout the semester can also bring students with similar interests together. University display boards, social media, and various communication resources can be used effectively to provide information about various clubs and organizations to the campus community. Programming and initiatives which promote belonging should be a priority. Additionally, a college campus must have inviting spaces that draw students, faculty, and staff in to facilitate connection. Collaborative spaces which are inviting due to being updated, comfortable, and perhaps even offering healthy food options could be used to encourage students to gather and

connect. Natural light and plants enhance comfort. Games and other activities which include students, faculty, and staff should be offered to bring a variety of individuals together. Health-related courses could include incentives for getting involved in these types of activities and others. This could occur through course requirements or extra credit opportunities aimed at learning about or engaging in activities that promote healthy behaviors.

Community Level

A college campus is typically very fast-paced and stress-provoking. Although the pace of campus life mimics American culture, a campus community is the perfect environment from which to critically evaluate this way of life and consider the negative outcomes that result from many of the behaviors that are inherent in the U.S., including high stress, poor sleep, poor diet, and lack of adequate physical activity.

Opportunities should be provided to bring local and international students together to encourage cultural competency. Spaces on campus that promote rest and relaxation would serve students, faculty, and staff as described previously. However, encouraging students from diverse backgrounds to gather would be ideal.

Mindfulness programs must be offered to students, faculty, and staff to teach and encourage this lifelong practice. Faculty and staff are encouraged have realistic expectations of students and aim for a healthy work/life balance for not only their own well-being but to serve as examples to students. Community, camaraderie, collaboration, and efficiency must be celebrated both within and outside the walls of the classroom. Additionally, resources must be provided which encourage physical activity. An inviting recreation center with a variety of equipment and classes, trails on campus which encourage walking, biking, or otherwise moving naturally, and when possible, there must be incentive to take the stairs rather than the elevators, perhaps by making stairwells more inviting. Faculty and staff offices and student spaces need to encourage movement (e.g., standing desks, treadmills), campus dining and food sources on campus must prioritize nutritious options as convenient and enjoyable choices.

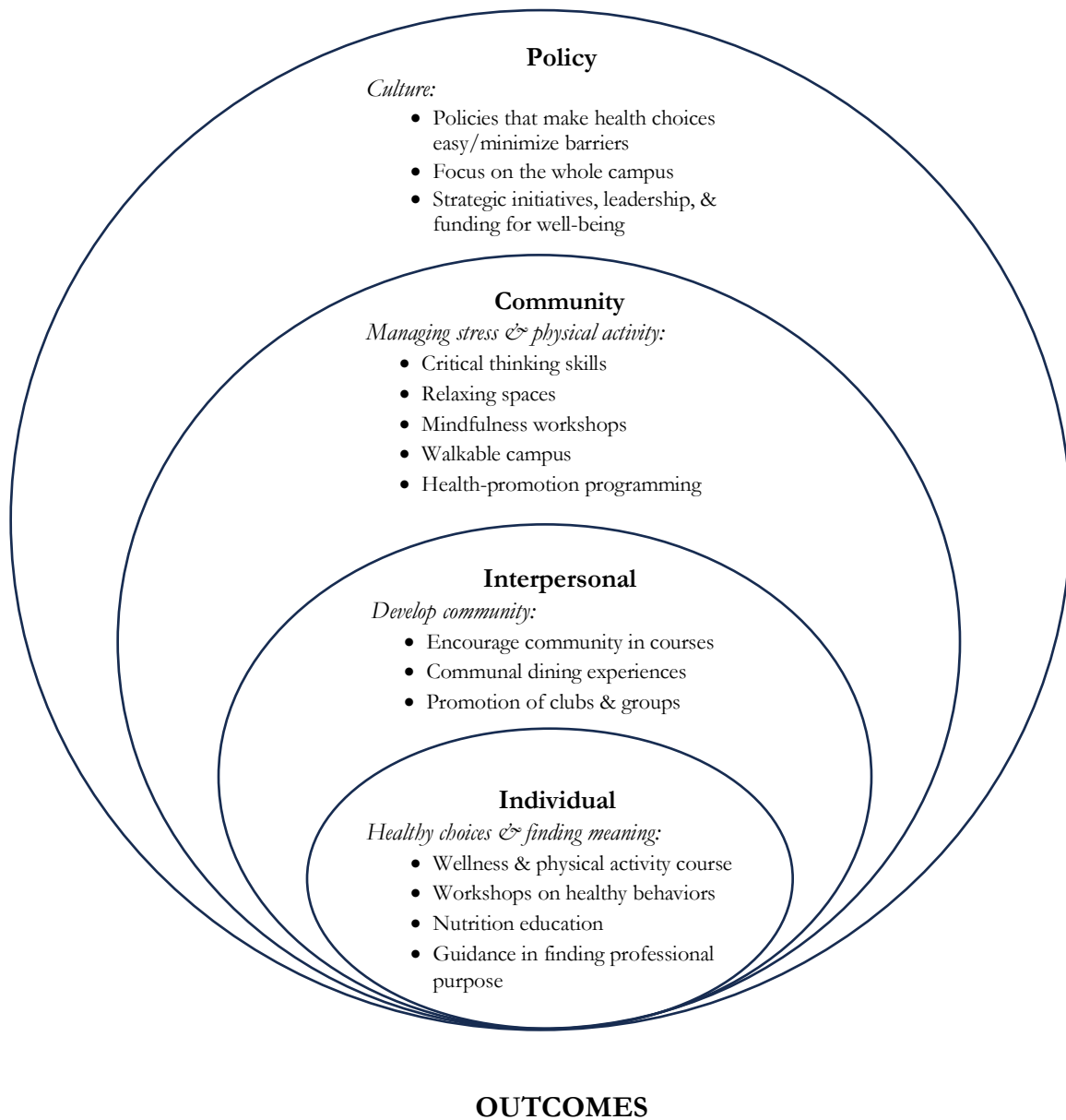
A college campus must provide resources for students related to mental well-being and safety. For example, a sufficiently staffed, inviting counseling and health promotion office are critical to meet the growing mental and physical health needs of students. More students are reporting symptoms of depression, anxiety, and suicidal ideation than in previous years (Healthy Minds Network, 2023). These offices could provide opportunities for students to be peer educators on topics related to strong relationships, substance use, interpersonal violence, and intimate relationships.

Policy Level

Much of college life is lived on campus. However, many colleges are in areas with abundant outdoor opportunities for recreation. The student recreation center is advised to provide opportunities off campus as well as on campus that encourages interaction with nature. The streets nearest a university will ideally be walkable, with sidewalks and bike paths to allow students to travel outside of campus without a vehicle. In addition, a university must prioritize wellness promoting policies for students, faculty, and staff. This would help to create the culture of well-being that is common in the Blue Zones. Figure 1 displays Blue Zone characteristics infused into the SEM for implementation on a campus.

Figure 1

Socioecological Model for Implementation on a Campus



The Blue Zones provide a framework for healthy living. Proof of the benefits can be seen in the health span and longevity of so many residents in the Blue Zones. As a result, communities in the U.S. have chosen to be designated as Blue Zone communities, devoting effort to encouraging similar behaviors among community members to improve health span and longevity; universities should follow suit. Every academic community should aim to be armed with the knowledge, opportunities, and tools to lead a healthy lifestyle, mimicking that of the Blue Zone as much as possible by making the healthy choice the easy choice. Implementing even some of these recommendations would likely have a positive impact on the health and well-being of students, faculty, and staff and the campus culture as a whole. As

academic communities implement strategies to improve health and well-being, corresponding data collection and analysis are imperative so that the benefits may be evaluated.

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