

# How to Sustain Brain Healthy Behaviors:

Applying Lessons of  
Public Health and  
Science to Drive Change

Global Council on  
**Brain Health**<sup>SM</sup>  
A COLLABORATIVE FROM **AARP**

A black and white photograph of two men laughing together. The man on the left is older, with white hair and a beard, wearing glasses and a sweater over a collared shirt. The man on the right is younger, with dark hair and a beard, wearing glasses and a checkered button-down shirt. They are both looking upwards and to the right, laughing heartily. The background is blurred, showing what appears to be a window or a wall with some texture.

A Report from the **GLOBAL COUNCIL ON  
BRAIN HEALTH** on **BEHAVIOR CHANGE**

# Background: About GCBH and Its Work

The Global Council on Brain Health (GCBH) is an independent collaborative of scientists, health professionals, scholars, and policy experts from around the world who are working in areas of brain health related to human cognition. The GCBH focuses on brain health underlying people's ability to think and reason as they age, including aspects of memory, perception, and judgment. AARP convened the GCBH to offer the best possible advice about what adults age 50 and older can do to maintain and improve their brain health. GCBH members gather to discuss specific lifestyle issues that may affect people's brain health as they age, with the goal of providing evidence-based recommendations for people to consider incorporating into their lives. The GCBH's work empowers individuals to benefit from insights on the cutting edge of brain health science to enhance well-being across lifespans.

Throughout 2021 the GCBH examined critical elements of behavior change as it relates to brain health. In this report, we share what we have learned about how to persuade and motivate people to engage in sustained healthy behaviors benefiting their brain health, how to change policies within local communities to support individuals' ability to make healthy choices, and how to optimize conditions for public health so all can thrive. Finally, we examine best practices in communication that we would need to adopt to facilitate brain healthy behaviors so that more people are equipped to experience better cognitive health and well-being.

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# Introduction

**O**ver the past six years, the GCBH has issued 12 reports on a broad range of topics examining whether adults' behaviors and lifestyle habits could affect their brain health as they age. [Links to each report are available in Appendix 8.] Based upon our review of the current state of science and the consensus of more than 200 experts from across the world and an array of disciplines, we have provided information on *what* people should do to achieve better brain health as they age. This report spotlights *how* we can influence people to act in ways that could benefit their brain health over their lifespans.

While the GCBH has touched on these issues in the past, this report provides an opportunity to address how to empower people to adopt and sustain actions that promote brain health. We offer actionable recommendations for individuals, communities and public health policymakers to achieve those goals. Our overarching goal is to create an environment in which it is as easy as possible for individuals to make healthy lifestyle choices and stick to them.

While we encourage people to make good decisions, the GCBH recognizes that an effective strategy to enhance brain health must be framed broadly, and that individual choices are made in a larger social and environmental context. For that reason, a multi-faceted approach is needed to address the many influences on individual behavior and decision-making. To achieve our goal, a new framework or model of interaction and engagement is required, especially with respect to engaging and empowering older people themselves. Simply putting research findings forward and expecting people to change their behaviors and sustain healthy lifestyles accordingly is unrealistic. A culture change is required. Policies and strategies to improve cognitive well-being should seek to engage and empower families, organizations, and communities with resources and skills to support brain health throughout the course of life. Public policies can help create environments and situations in which that is possible.

## Here is our approach for brain health behavior change that we discuss in-depth in this report:

### GCBH's Approach to Brain Health Behavior Change

#### Three Key Audiences...



#### Individuals

Members of society, and their friends and family members



#### Communities

Healthcare providers, aging advocates, nonprofit organizations, employers and the private commercial sector



#### Policymakers

Government officials and legislators, interest groups, business and industry leaders



#### ...And Three Foundational Elements



#### 1. Knowledge



#### 2. Motivation



#### 3. Confidence

Around the world today about 50 million people have dementia with about 60 percent residing in low and middle-income countries. Longevity is increasing across the globe, and because increasing age is the strongest known risk factor for cognitive decline, people are concerned that aging demographics will necessarily result in huge numbers of people living with dementia. According to the World Health Organization, the number of people with dementia is expected to grow to 82 million by 2030 and 152 million by 2050.

If we are to lower this expected trajectory, it will take effective behavior and culture changes, initiated and driven by all the pertinent actors working in concert at all levels of society. The framework for change the GCBH is suggesting recommends actions that individuals, organizations, and communities can take together that could make a real difference for better brain health outcomes. The benefits of those healthy behavior changes at the individual level will be amplified if they are supported through public policies. It is through these multiple streams of changes from different actors occurring together and complementing each other that we will be most effective at reducing the risks.

However, before these actors will work together towards a common goal of supporting brain health behavior change, they must have the **knowledge** (the evidence it is possible), the **motivation** (reasons why it will benefit them to do so), and the **confidence** that effective change is possible. The GCBH demonstrates below that when we apply the lessons of public health and science through effective communication, we can achieve better brain health for adults by removing barriers and encouraging adoption of healthy lifestyle behavior changes.

## Better Brain Health for Adults through Lifestyle Behavior Change is Possible

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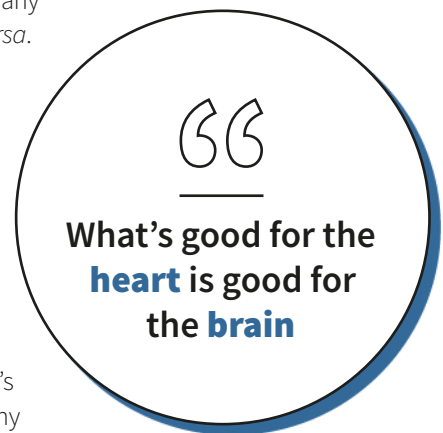
To start, it is important to first define what we mean by brain health in the context of behavior change. As noted in the background to this report, the GCBH normally focuses on brain health underlying people's ability to think and reason as they age, including aspects of memory, perception, and judgment. However, in this report we address a wider array of elements important to adults' brain health. Many aspects of cognitive function as we age are impacted by mental well-being and *vice versa*. The healthy behaviors we want to encourage, including physical activity, healthy diets, and sufficient, quality sleep are part of healthy lifestyle choices that also foster mental wellness and overall healthy aging in addition to reducing risks for cognitive decline that impair people's ability to think and reason.

While we need to learn more about the effects of behavior on brain health, including the risk of dementia, scientists generally agree that a long-term commitment to healthy living can influence the trajectory of cognitive aging. People tend to pay a price for unhealthy habits and benefit from good ones. We can reduce the risks to brain health through lifestyle changes that optimize an individual's potential for wellness. And in cases where cognitive abilities do in fact decline, healthy behaviors may help a person preserve the best quality of life.

We know, for example, that what's good for the heart is good for the brain.

Regular exercise, along with other activities that help cardiovascular health, supports cognitive and mental wellness. Cognitively stimulating activities over the life course, such as education (formal or informal), gaining new skills, and mentally challenging hobbies, encourage brain health. Evidence has grown that maintaining optimal blood pressure, quitting smoking, correcting hearing loss, managing blood sugar, and getting sufficient sleep are among the modifiable behaviors that support cognitive resilience. In **Engage Your Brain: GCBH Recommendations on Cognitively Stimulating Activities**, we defined cognitive resilience as the brain's ability to respond more adaptively to stress. Adults have different levels of cognitive reserve, that is individual differences in the resilience or adaptability of cognitive processes, such as memory, reasoning and attention, and these differences help explain why some people are more susceptible than others to age or disease-related brain changes.

Based on scientific findings and the GCBH's careful analysis, AARP has highlighted the modifiable lifestyle factors of physical activity, intellectual stimulation, sleep quality, stress management, social engagement, and nutrition as **Six Pillars of Brain Health**. Evidence continues to mount that people may be able to lower their risks for cognitive decline by engaging in these and other healthy lifestyle behaviors. The greater number of healthy lifestyle behaviors that people engage in also seems to correlate with a lower risk for dementia. Research trials now underway are trying to determine the cause and effect of the combination of multiple healthy behaviors on the multiple causes of dementia. But high-quality correlational data strongly suggests people can reduce their risks.



## Six Pillars of Brain Health



### Be Social

Keep in touch with friends & family, don't let yourself get isolated.



### Engage Your Brain

Find ways to stimulate your thinking, explore new interests and hobbies.



### Manage Stress

Practice relaxation, adopt a stable daily schedule.



### Ongoing Exercise

Move throughout the day, target 2½ hours a week of moderate physical activity.



### Restorative Sleep

Get 7–8 hours of restful sleep every day.



### Eat Right

Choose a nutritious, heart-healthy diet of fish, veggies, and fruits.

In two United States' National Institutes of Health-funded observational studies of nearly 3,000 participants followed over time, those who engaged in at least four of five healthy behaviors studied were found to have a 60 percent lower risk of dementia.<sup>1</sup>

### These five healthy lifestyle factors included three things to *do*:

1. Engage in moderate to vigorous physical activity (a commonly suggested goal is at least 150 minutes a week);
2. Eat a diet designed to limit hypertension (vegetables, fruits, whole grains, fish, poultry, nuts, low-fat dairy, and vegetable oils);
3. Engage in cognitively stimulating activities (e.g., continuing to learn and engage your mind whether through work, in a formal course, volunteering, or other challenging activity),

### and two practices to *avoid*:

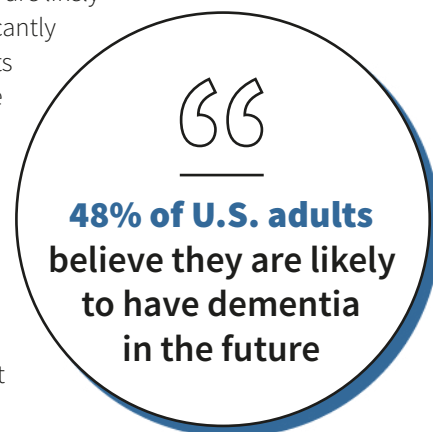
4. Smoking, and
5. Excessive consumption of alcohol. (The GCBH recommends if you don't drink alcohol, don't start. If you do drink, limit alcohol to no more than one drink a day for women and two drinks a day for men. See our earlier reports, [Brain-Heart Connection](#) and [Brain Food](#) for more information on the impact of drinking wine and other alcohol on our brain health.)

The Lancet Commission, an international group of researchers, estimated that perhaps as many as 40 percent of dementia cases could be prevented if people effectively managed 12 modifiable lifestyle factors the Commission identified.<sup>2</sup> Such estimates call for further study, yet they send an important signal. The GCBH believes that a broader public endorsement of brain-healthy behaviors could yield great benefits throughout the world potentially preventing or delaying cognitive decline for many people.

This vast potential is not sufficiently recognized. A 2021 [AARP survey](#) found that six in 10 adults age 40 and over in the United States believe that cognitive decline is an inevitable consequence of getting older. The survey also found that almost half of adults age 40 and older (48 percent) believe they are likely to have dementia in the future.<sup>3</sup> Knowing that lifestyle behaviors right now can significantly reduce the risks of cognitive decline or developing dementia later may influence adults to alter their behaviors. Collectively, these risk reduction actions may reduce cognitive decline and dementia rates in the future.<sup>4</sup>

Public fears about cognitive decline have not yet translated into awareness of effective risk reduction behaviors. A [2015 AARP survey](#) of adults in the United States age 34 to 75 found that only 44 percent of respondents noted physical exercise as a key factor to support brain health. Awareness of the benefits of stress management and social connections to friends and family also ranked low among the responses, yet these too are vital supports of cognitive wellness. Forty-two percent of adults were not even aware that a healthy diet is important to maintain their brain health. In 2021, [Alzheimer's Research UK's Dementia Attitudes Monitor](#) showed that only 1 in 3 UK adults (33 percent) were aware they could reduce their risk of dementia and more than half (56 percent) couldn't name any major risk factors for the condition.

Knowledge or awareness of benefits to the brain through modifiable lifestyle factors is necessary, but clearly is not sufficient to support widespread adoption of healthy behaviors. Despite what we assume is common knowledge that exercise is good for your health in general, adults are not reporting they engage in the recommended amounts of physical activity. For example, another study found that only “60% of adults in England, 56% in Australia, and 50% in the USA report participating at the recommended levels of 150 min/week of moderate to vigorous physical activity.”<sup>5</sup>



## Achieving Brain Health Behavior Change Requires the Combined Actions of Individuals, Communities and Supportive Public Policies

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To achieve success, strategies for change must consider the social and environmental context in which people make lifestyle choices and whether they are realistically able to persist in healthy behaviors. We know that the [social determinants of health](#) have a major impact on people's health, well-being and quality of life.<sup>6</sup> Even the most accurate public health campaigns are doomed unless they are crafted and delivered in a manner that resonates with their intended audience and is feasible within their environment. Strategies and interventions must be appropriate and adapted for differences in culture and the varied challenges and institutional and systemic barriers faced by people.

Large societal forces are enormously influential in how easy or difficult it is for people to implement healthy lifestyle choices. Access to health care resources, opportunities for social engagement, and the ability to engage with the physical environment depend on a multitude of factors. Conditions where people live, learn, age, work, play, and worship can all contribute to risk factors for chronic disease and underscore the many socioeconomic factors at play. Outdoor exercise is easiest for those who live in safe neighborhoods that have temperate climates. Higher levels of education are linked to greater longevity. Friends and family may exert strong influence over our habits and lifestyle choices, including our decisions about health care. And finally, consumer products and the commercial environment in which people live and work can also hugely influence behaviors.



It is well-established that along with increasing age, being a member of racial or ethnic minority groups or living in low- to middle-income communities puts individuals at increased risk for developing chronic disease. The lack of access to high-quality, consistent, preventative health care is a long-standing issue in certain communities, especially those with lower incomes, and a major contributing factor to chronic disease and health outcomes. Rates of heart disease, stroke, cancer, diabetes, obesity and dementia are higher in communities of color than among white communities in the U.S. As of 2019, almost **29 million Americans lacked health insurance**, including many African American and Hispanic people. Various health issues that may be better managed with good access to health care, including hearing loss, hypertension, obesity, and depression have been **linked with causing or exacerbating cognitive decline or dementia**.

Improving brain health for the public requires that these and other disparities be addressed. Public and private sectors can contribute to shaping an environment that is more supportive to cognitive well-being for everyone. The GCBH calls on policymakers, researchers, the private sector and health care practitioners to pursue initiatives and collaborate in ways that increase our knowledge and refine our cognitive strategies for the benefit of all individuals and communities around the world.



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# Individuals and behavior change

**A** serious discussion about individuals making healthy lifestyle changes must recognize that behavior change is hard. Individuals may lack information on the importance of engaging in good health behaviors, or they may not believe it is relevant to their lives. Others may have personal circumstances that make behavior change particularly challenging, such as physical disabilities that may limit exercise options, or living in an institutional setting in which they have little control over their diet.

People's ability to obtain, understand the benefits of, and use health information to prompt good decision making and follow medical treatments – what researchers refer to as “health literacy” – plays a large role in their ability to implement brain-healthy behaviors. People close to them may model unhealthy values and behaviors. The environment in which people live may lack vital supports, such as access to health care, or make it harder to make good choices, such as checking with a doctor, staying in school, or going outdoors for exercise. Land use, walkability, transportation, and other services within a community can promote healthy behaviors or create barriers.

One study concluded that modifiable habits and choices play a role in 40 percent of deaths in the United States (e.g., lack of physical activity, failure to follow medical advice, smoking). But we can't just stop at the point of listing the barriers that make behavior change difficult. Instead, we must look to actions we can take to support individuals in overcoming those barriers.

AARP's **Six Pillars of Brain Health** represent broad categories of activities in which productive behaviors and lifestyle adjustments can foster cognitive wellness and healthy aging (physical activity, intellectual stimulation, adequate sleep, stress management, social engagement, and good nutrition). One way to achieve change is to begin with small, achievable steps toward a single goal. It is often recommended that you start with selecting a goal that is **s**pecific, **m**easurable, **a**ttainable, **r**elevant, and **t**imely (sometimes referred to as **SMART** goals).



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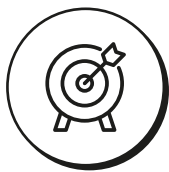
Consider the importance of intellectual stimulation. That concept may sound abstract or difficult. Yet it can be boiled down to simple choices we make in everyday life such as: learning something new, engaging in a hobby, continuing to work, designing a quilt, practicing a musical instrument, cooking different meals, or volunteering in the community. Do things you usually do in a different way, such as taking an alternative route to a store. Individuals may also choose to re-engage in activities they used to enjoy to challenge their minds later in life.

Accomplishing initial simple steps relating to one of the pillars of brain health can set an affirmational tone for achieving more ambitious healthy behavior goals more broadly. If people succeed in establishing a foundation of success in implementing small wins towards better brain health, healthy habits can be expanded and integrated more fully into their lifestyle.

### Three Foundational Elements Needed for Individuals



**KNOWLEDGE.** In and of itself, knowledge is not enough to inspire change. But it is needed for real understanding, which can influence attitudes and foster awareness. Knowing that certain actions and lifestyle choices can impact their likelihood of healthy aging including their ability to build cognitive resilience empowers people to consider their choices. Basic health literacy enables people to obtain and make use of health information that affects their well-being.



**MOTIVATION.** Individuals need to cultivate the internal force that helps them move forward. Motivation is the force that gives behavior its “energy, direction and persistence.” GCBH expert Dr. Ayelet Fishbach describes four elements that help maximize motivation: setting a goal, monitoring progress, addressing multiple goals, and designing social support.



**CONFIDENCE.** Even with knowledge and motivation, people are not likely to attempt behavior change unless they believe that something is achievable and realistic, and that it will work. Too often, such confidence or ‘self-efficacy’ is lacking. Yet confidence can be built through achievable steps. The starting point can be one modest action that leads to a small success that can be built upon and strengthened over time.

## Examples of Individual Actions Supporting Brain-healthy Behaviors

### Increasing physical activity

Let’s take the example of physical activity. According to the Centers for Disease Control and Prevention, almost one in two U.S. adults (47 percent) **does not get the recommended amount of aerobic exercise.** People may be generally aware that exercise is good for their health (that is, they have some knowledge base), but not be so convinced about how beneficial it will be for them personally. They may also view

exercise as difficult or unpleasant, or believe the level of effort required is too much for them. People may also be unaware that even small increases in physical activity could benefit their brain health. Knowing that something as simple as taking a daily walk can provide long-term benefits to your brain has the potential to motivate individuals to change their behaviors to increase physical activity. It also helps to start with a physical activity a person already enjoys, whether it be dancing, basketball, tennis, or another option.

Motivation to become more physically active can be complex. Most people like the idea of long-term health benefits but they may hold competing goals. The desire for short-term gratification may lead them back to the kitchen for a snack they don't need or to spend time on social media instead of going out for a walk. Or they may face pressures related to their family or job that compete with time to be more physically active. Indeed, social support is critical for exercising. Therefore, even if a person has the knowledge that physical activity will benefit their brain health, they still need to possess the motivation to sustain the actions that will benefit cognitive and physical health. Helping people identify how the personal benefits of changing their behavior far exceed the costs is one way to strengthen motivation to engage in regular physical activity.

People also need confidence that engaging in the new activity is something they can realistically do and that it will pay off. They need to really believe in their personal abilities. This goal may be achieved by taking an initial, modest step – a short walk that does not take a lot of time or disrupt their schedule. Getting over an initial hurdle, however small, can start to build confidence in a person. With more confidence, that person is likely to attempt bigger things. Individuals who have been idle for a long time may start to feel a little more fit and to experience the pleasure of taking time out of their day to be more physically active. If the person walks with a friend, there can also be a rewarding social dimension that provides social support to continue the activity.

## Treating high blood pressure

Experts agree that “what’s good for the heart is good for the brain.” The GCBH report on **The Brain-Heart Connection** documents the benefits of physical activity and recommends steps for individuals to take both in their personal lifestyle and in preventive health care.

Consider the health dangers posed by high blood pressure, also known as hypertension. This is a serious risk to brain health that can lead to stroke, mild cognitive impairment, or **dementia**. It usually can be managed with the proper behaviors. Yet people often neglect their doctors’ advice and do not fill their prescriptions or take their medication regularly even when they have it readily available. Fear, cost, complexity, and mistrust are all factors that can discourage patients from taking medications. This can lead to serious problems for individuals with high blood pressure.

In addition, a major barrier to managing hypertension is that people often do not know they have it because it usually develops without symptoms. One in three individuals with high blood pressure **does not even know it**, the CDC has reported.

Once they possess this vital knowledge, individuals can often take steps to lower their blood pressure. But to do so, they must **address those causes they can manage**. To lower blood pressure, people do best when guided on specific, achievable actions they can take to increase physical activity and reduce overeating, excess drinking, and smoking. Taking steps to lower blood pressure through small lifestyle changes, such as reducing sodium (salt) intake, may start to bear fruit **within days or weeks**.





## Recommendations for individuals

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Individuals can consider the following tips for successful behavior change:

1. **Set a goal, identify a specific action you want to take.** Think about the behavior you would like to change and why it is important to you. (What do you stand to gain by changing your behavior?)
2. **Be thoughtful and realistic about the goals you choose.** Think about the various options and choose one that fits in well and regularly with your daily routines.
3. **Take a step-by-step, gradual approach.** Starting with something easier for you to do may help you sustain the behavior. Some people find it helpful to monitor completed actions at the beginning and uncompleted actions sometime later as they move towards achieving their goal.
4. **Find something that is fun; choose what is enjoyable for you.** Incorporating some element of pleasure in what you choose provides positive reinforcement to keep it going. If you don't like running, but enjoy dancing, take a dance class. Swap out the chocolate bar with a healthier option you also like. Do you prefer fruit or a snack of low fat vanilla yogurt sprinkled with sliced almonds?
5. **Re-purpose some of your free time.** While it varies by age, gender, race and income, no group of Americans report having fewer than 4.5 hours of leisure time per day – yet much of it is spent in sedentary behavior in front of screens. Try substituting healthier habits for less desirable ones; switch 30 minutes of walking for some of the time you would normally spend on social media or watching television.
6. **Rethink your environment to reduce temptations and encourage better choices.** The more you put healthy choices in easy reach, the more likely you are to make them.
7. **Celebrate the wins.** Recognizing small achievements can have a real impact on adherence, especially at the beginning of pursuing a goal. Progress can increase commitment. Try keeping a record of your successes.
8. **Learn from the setbacks.** Setbacks show you what works and what doesn't work for you, and help you recall your commitment. Paying attention when you fail to do something towards your goal may help motivate you to not lose your previous progress and bear down to cross the finish line.
9. **Involve friends or family with common goals to reinforce healthy choices.** Involving a friend or family member in your new behavior can be a win-win. Not only can this help make the process more enjoyable and encouraging, but you may also help someone else. Together, you can be each other's role models and help one another stick to your goals.
10. **Pick a good start time.** Plan to introduce new routines and behaviors at a time that offers a perception of a “fresh start.”<sup>7,8</sup> This can be helpful in providing further motivation to helping individuals achieve desired change. For example, New Year's Day, the start of a new month or season, or a birthday all offer an opportunity to set new goals.



# Communities and behavior change

**F**riends and family members, health care providers, community health workers, aging advocates, the private commercial sector and nonprofit organizations are among the many community members that can encourage healthy behavior and wholesome lifestyles.

In countless ways, these stakeholders can promote what AARP has called the **Six Pillars of Brain Health** (physical activity, intellectual stimulation, adequate sleep, stress management, social engagement, and nutrition).<sup>i</sup>

The social influences of those close to us can make a major difference in what we do or fail to do. Health care providers are uniquely positioned to help individuals understand the need to change their habits. Community organizations may have local impact and hold resources to educate and raise public awareness. The business community can play a far-reaching role in encouraging or discouraging consumer behavior and changing culture. Collaborations that involve diverse stakeholders can broaden the impact of an initiative.

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**Health care providers are uniquely positioned to help individuals understand the need to change their habits**

<sup>i</sup> To help people remember which actions foster a brain-healthier lifestyle, AARP has organized the six pillars of brain health into an acronym, BE MORE: **B**e Social, **E**ngage Your Brain, **M**anage Stress, **O**ngoing Exercise, **R**estorative Sleep, and **E**at Right. Learn more at <https://stayingsharp.aarp.org>

## Three Foundational Elements Needed for Communities



**KNOWLEDGE.** Community leaders and activists are just beginning to learn and share the knowledge that healthy behaviors and lifestyles help individuals stay well and maintain their quality of life. They now need to *apply* that knowledge – educating and empowering individuals, creating communications and awareness campaigns, forming coalitions, and advocating for helpful initiatives.



**MOTIVATION.** Communities have a clear self-interest in promoting healthy behavior. The well-being of the public translates into societal cost savings and productivity. It strengthens the workforce and economy, and supports the basic values and goals of important stakeholders, such as health care providers and mission-based organizations.



**CONFIDENCE.** Evidence continues to grow that carefully constructed initiatives can foster behavior change. Research shows that such efforts should be multi-faceted and multi-level, which means that different stakeholders may contribute important elements, such as health care, counseling, education, communications, and workplace programs.

## Examples of Community Actions Supporting Brain-healthy Behaviors

### Health Care Providers

Health care providers are well-positioned to help patients improve their lifestyle habits. They can raise awareness and make recommendations. They can follow up and help track progress. Importantly, they can enhance patients' motivation and confidence that healthy choices are worthwhile to reduce risks as well as mitigate symptoms of disease.<sup>ii</sup>

Consider the risks that obesity raises for an array of medical issues, including heart disease, diabetes, certain cancers, sleep apnea, brain health, and other ailments. Research has shown that individuals living in underserved communities, who may lack access to fresh and nutritious foods among various challenges, are more likely than others to become obese.

A review of 50 studies about changing behavior within primary care found that 28 yielded significantly favorable health outcomes based on either behavioral counseling, motivational interviewing, education, or advice. The review also suggested that doctors were not the only health care providers who influenced patients. Researchers concluded that nurses were equally successful as doctors in dispensing guidance on behavior change.

<sup>ii</sup> Encouragingly, 2021 AARP research shows that among many health care providers familiar with diagnosing and treating adults with dementia, these providers are already aware that healthy behaviors such as regular exercise, cognitively stimulating activities, and social engagement can help manage the symptoms of dementia. However, they underestimate the willingness of adults to engage in those healthier lifestyle behaviors. For more, see: <https://doi.org/10.26419/res.00471.002>

Or take the example of blood pressure management. Say a doctor has diagnosed a patient with hypertension and creates a detailed action plan to lower the patient's blood pressure. Research shows that by the time a year has passed, the typical level of adherence has slipped down to the 50–60 percent range. Yet the rate of compliance is more than double that for physicians who communicate effectively and listen with care. Such communication can help the physician understand how patient behavior has been influenced by friends, family, co-workers, and past events in life, enabling tailored recommendations for their patients.

## Employers

Employers play a powerful role in promoting and supporting the engagement of healthy behaviors among their employees and families. An analysis published by the *Harvard Business Review* found that among businesses with comprehensive well-run wellness programs, employee wellness investments benefited the companies **as well as their employees** through lower health care costs, greater productivity and better morale and retention.<sup>9</sup> According to the **CDC**, workplace health programs have the potential to lower health risks for 138 million US workers. Health and wellness initiatives can positively affect the culture of the workplace, influencing social norms such as physical activity and healthy eating. Employer efforts can guide workers toward education, health screenings, immunizations, and follow-up care.

Employers can give workers access to behavior-change specialists, including exercise physiologists, nutritionists, and psychologists, through wellness programs, health insurance offerings or pooled savings plans. Employers can also create healthier work environments by offering well-designed places to spend the work-day. They can encourage movement through offering stand-up desks or exercise spaces and support cafeterias or vending machines that offer nutritious food. Creating a culture of health can take many forms. Employers can even foster workplace practices supporting healthy sleep. For example, by minimizing shift work or scheduling for periods of recovery, not expecting employees to respond 24/7 to email requests, and respecting vacation and break-times, employers can promote better brain and mental health.<sup>10</sup> Committed leadership at all levels within the organization providing positive incentives for healthy lifestyle behaviors can create a trusted partnership where both employers and employees thrive.

Such efforts pay off for both the employer and society at large with lower health costs, greater productivity, and enhanced worker engagement at work. Stroke and heart disease alone cost the US health care system more than \$200 billion a year and are responsible for \$138 billion in lost productivity at work. Just two decades from now, the cost of Alzheimer's disease is estimated to range from \$379 billion to \$500 billion a year. And that is just an estimate for the United States. Diabetes and cancer are among the other diseases that cost many billions a year throughout the world. An analysis of 56 studies found that medical or absenteeism costs were as much as 30 percent lower for employers who conducted worksite health promotion programs; a separate review found that employers gained more than \$3 for each \$1 spent on worksite wellness programs.

The CDC has designed the **Worksite Health ScoreCard**, a tool to help employers understand the health status of the workplace environment and their own efforts to promote wellness. The scorecard, featuring 154 questions about programs, policies, the environment, and employee benefits, spans 18 topic areas, including heart attack, stroke, stress management, sleep, and weight management. Employers can use the results to identify gaps in their own programs and develop strategies to address them including preventive services, training, and tools. Effective wellness programs should be evidence-based, comprehensive, and may include interventions that address various health issues.



“  
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## Organizations with a Mission

Community health providers assist communities and individuals in adopting healthy behaviors. By educating area residents on what resources are available in their communities and giving them the tools to access care, community health workers empower people to take control of their own health. Community health organizations or **promotoras/promotores** play a tremendously valuable role in working across cultures and, in tandem with health care providers, encouraging and sustaining behavior change.

Mission-driven organizations can also provide individuals with information and tools to assess their own wellness and motivate behavior change. AARP's **Staying Sharp** program offers a low-cost **brain health assessment** that enables participants to gain insight into aspects of their brain health and lifestyle behaviors, track their scores over time, and learn about healthy lifestyle behaviors that may optimize cognitive wellness as they age. For a more in-depth overview of AARP's Staying Sharp, see Appendix 4.

Community leaders can also leverage knowledge through partnerships and collaborations through efforts that address the public broadly or home in on particular populations. The Arthritis Foundation's **Walk With Ease in the Worksite** program is designed as a tool for employers to encourage exercise for individuals with or without arthritis. The multi-component program includes motivational strategies, health education resources, and stretching exercises. The program aims to increase balance and ease pain, while enhancing physical and mental health of employees. Evaluation of the community-based program showed it to be safe and effective; moreover, participants maintained some benefits even one year later.<sup>11</sup> This is yet another example of how employers can work with advocacy groups to support healthy aging in the workplace.

**#BrainMatters Chat** is an online collaborative initiative of Johns Hopkins University and community-based non-profits that promotes information about brain health, memory loss, and caregiver resources on Twitter. Sessions have focused on scientific findings, practical information, and concerns of specific populations, including women and the Black community.

The **NIH National Institute on Aging (NIA)**, which conducts and supports a broad range of aging research, provides information on **brain** and **cognitive** health. NIA also offers relevant information via **Alzheimers.gov**; free print publications in **English** and **Spanish** such as **Understanding Alzheimer's Disease: What You Need to Know**; and **Information Resource Centers** staffed by professionals who are available to answer questions in English or Spanish.

## Community Organizations Serving People Already Living with Cognitive Impairment

Finally, it is very important to emphasize that opportunities for brain-healthy behavior change are NOT limited to people who have high cognitive function. People living with dementia at all levels of cognitive function and their caregivers can greatly benefit from supports that promote the ability to engage in meaningful activities aligned with the pillars of brain health. Community-based interventions providing education to people with dementia have demonstrated improvements in physical and cognitive function, activities of daily living, mental health, behavioral disturbances, mood, and other measures of quality of life. Training programs for caregivers have repeatedly demonstrated that building their skills to support brain healthy behaviors for people living with dementia result in significantly improved quality of life both for their loved one and the caregivers.<sup>12</sup>

In the UK, the Alzheimer's Society **partnership with Sport England** supports brain healthy behavior change for people living with dementia. In 2019, these two mission-based organizations produced a dementia-friendly guide for individuals and organizations working in the sport and physical activity sector. It is designed to provide a greater understanding of dementia as well as provide tools and guidance for them to help people affected by dementia lead more active lives. Alzheimer's Society has also completed a rapid evidence

review with Brunel University London into the prevalence, benefits, and experiences of physical activity for people living with dementia, identifying both research gaps and recommendations. Qualitative research was conducted with a range of stakeholders was completed to understand the barriers and motivators to being active. Alzheimer's Society is now using behavior change theory to guide intervention developments and they will evaluate the impact of the solutions they develop to learn what works to support people living with dementia to become more physically active.

While researchers are collecting further evidence, studies of implementing support for action on multiple modifiable lifestyle factors, such as diet, physical activity and cognitive engagement are beginning to show that “improvements in lifestyle risk factors for dementia can lead to improvements in cognition over a short time frame with a population experiencing cognitive decline.”<sup>13</sup> A multidomain intervention evaluated in a randomized controlled trial in Australia has enormous potential, showing that when given community support, individuals experiencing cognitive decline can learn behavior change skills and make meaningful lifestyle changes to reduce further cognitive decline and perhaps modify the trajectory of the disease. For example, a case report building on the success of the Australian trial examined the feasibility of a clinician-delivered training by video over Zoom. While it was a very small evaluation, it showed “potential to promote sustained lifestyle changes” for those with mild cognitive impairments “by teaching mindfulness and behavior change skills that can last a lifetime.”<sup>14</sup>

## Recommendations for community-based organizations

1. **Set a goal identifying behavior change targets focused on brain health.** Use your platforms to promote brain-healthy behaviors such as increasing cognitively stimulating activities, increased physical activity, or improved heart health.
2. **Create opportunities for peer-to-peer health coaching.** Well-trained peers understand how to communicate effectively and may have insight into cultural influences that impact a person's actions.
3. **Answer these seven questions before you create a public messaging campaign:**
  - Who is your audience?
  - What are the benefits you seek for your audience?
  - What are the proof points you will offer for your goals to persuade participants to engage?
  - What simple action steps will you recommend?
  - What is the most effective tone for your message? Scientific? Funny? Emotional?
  - Who can deliver the message with the greatest credibility for your audience?
  - How will you provide feedback to your audiences on their progress?
4. **Talk and listen to your target audience.** You want to be sure that the behavior or action you are encouraging resonates with the parties it is designed to support.
5. **Take an inclusive, multi-faceted approach collaborating across sectors to create a culture of health.** Aim for public-private partnerships. Work with individuals and groups. Think of behavior change as a group effort with shared benefits and positive outcomes.
6. **Keep track of the response.** Monitor progress and keep participants up to date on progress. The [UK MINDSPACE Report](#) (2010) outlined the existing 4Es of policy work – Enable, Encourage, Engage, Exemplify – and added two supporting actions – EXPLORE (takes place before policies are implemented) and EVALUATE (judges the success of the policy).



# Public health policy and behavior change

**T**he conditions in which people live and learn can have a major impact on health throughout the course of life including cognitive functioning as older adults. Policies that affect these basic conditions can help inform, encourage good decisions, and put options in reach that support health in general and brain health in particular.

In ways that are both direct and indirect, policies that support healthy lifestyles and foster cognitive resilience can be developed at the local, national, and international levels. Such initiatives can promote education, awareness and enablement. They can deliver communications that are culturally sensitive and effective for specific communities. They can support research into neuroscience. They can improve access to recreation that helps people exercise and relieve stress. They can enhance opportunities for older adults to stimulate their minds through classroom learning and volunteer opportunities. They can combat isolation and promote social engagement. Policy can encourage employment opportunities for older adults, such as by fighting ageism in the workplace.

Starting in childhood, improving access to good schools, good health care, and wholesome food can have long-term benefits, enabling people to thrive in the workforce and age with health and financial security. Yet these fundamental supports vary markedly among communities. Disparities in education and other fundamental supports are harmful to underserved communities, including among Black, Hispanic, and Native peoples. A significant body of research has established that disadvantages in childhood, such as poor education and health care access, may be linked to health issues in later years, culminating in shorter life spans. Initiatives to reduce air pollution and research into long-haul COVID-19 and brain fog are examples of policy efforts that may foster cognitive resilience through the life course.

Effective public health policy benefits entire populations and creates the environments enabling us to thrive as we live and age. The World Health Organization has defined public health as “the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society.”<sup>15</sup> Entities such as governments, non-profit organizations, and private enterprises can work together to foster conditions promoting health, removing barriers and making it easier for people to choose brain-healthy behaviors.

Therefore, if we want to achieve brain health behavior change at the population level, we must engage public health policymakers to create the conditions and the organizational frameworks that promote it.

While public health measures are not 100 percent effective in all cases, they clearly make a difference. Since 1900, life expectancies have increased in all countries. In the United States, longevity has increased 30 years, 25 years of which are attributable to advances in public health such as vaccination, motor vehicle safety, workplace safety, control of infectious diseases, and decline in deaths from coronary heart disease and stroke.<sup>16</sup>

Pertinent to brain health, large reductions in population salt intake have been achieved through nationwide public health campaigns. For example, over a 30 year period Finland instituted a 40 percent decline in salt consumption, resulting in large reductions in average blood pressure and an 80 percent drop in deaths due to stroke.<sup>17</sup>

Policy is so powerful a lever that it can affect brain health even when that is not the objective. Consider the rules that affect retirement. For many years, Social Security treated age 65 as the “full retirement age” when an individual could collect unreduced benefits. But as part of a plan to strengthen Social Security’s finances, the government raised the age for full benefits to 67 for individuals born 1960 and later. Researchers have since found evidence that the later retirement age has meant less cognitive decline for those who remained in the workforce. Further, the researchers concluded that better cognitive function for those who waited until age 67 to retire applied to all genders, racial and ethnic groups, and people of all education levels.

In addition to creating conditions that can foster brain health, governmental policymakers have unique tools at their disposal to shape behavior. For example, states have been known to provide movie tickets, gift certificates, and coupons for health products to individuals who exhibit recommended behaviors in their **Medicaid and State Children’s Health Insurance Program (SCHIP)**. Alternatively, traditional law-making authority of governments such as legislation, regulations, taxes, consumer incentives, and consumer penalties can reshape industries, influencing the choices available to people and behaviors expected of them.

Public health interventions such as information campaigns can increase awareness and motivation by providing information and strategic messaging that emphasizes how healthy behavior changes can lead to personally meaningful outcomes. Public campaigns can support increased confidence and self-efficacy through specific interventions and environmental restructuring that facilitates engaging in healthy behaviors. Examples of environmental changes include discounts for healthy food, smoking bans, healthier food choices in vending machines, and advertising restrictions on harmful products.

National policies, plans, and strategies around healthy aging can be valuable tools to promote cognitive well-being. They can influence budget decisions and promote collaboration among various stakeholders. We see growing signs of policy and advocacy for healthy aging, including some initiatives that foster brain health. Cyprus and Israel, for example, have established physical activity as a priority for all generations, while designing exercises specifically for individuals who are 80 years old and older.<sup>18</sup> According to a **recent report** by AARP International, the prevalence of such plans varies widely, however. Countries in Southeast Asia were most likely to have national policies or strategies for healthy aging, while countries in the Eastern Mediterranean and Western Pacific regions were least likely, with the Americas and Europe falling in between.

Separately, AARP and Economist Impact (formerly the Economist Intelligence Unit) **have reported** that in much of the world, older adults lack access to quality health care. This is a serious barrier to improving brain health and remains a particular challenge in rural areas and lower income countries.<sup>19</sup> In these areas, it will be particularly important to demonstrate that putting resources towards preventing cognitive decline by reducing risks through brain-health behavior changes will be a cost-effective strategy to preserve scarce health care resources.



Support for brain-healthy behavior change may be starting to emerge as a policy goal in the United States. Consistent with the evolving science and our numerous GCBH reports, the U.S. Department of Health and Human Services recently adopted a national goal focused on risk reduction. On December 27, 2021, the federal government announced actions to “Accelerate Action to Promote Healthy Aging and Reduce Risk Factors for Alzheimer’s Disease and Related Dementias.” See [National Plan to Address Alzheimer’s Disease: 2021 Update](#).

The six strategic actions include:

1. Accelerate research on risk factors.
2. Facilitate translation of risk reduction findings into clinical practice.
3. Accelerate public health action to address the risk factors.
4. Expand interventions to reduce risk factors, manage chronic conditions and improve well-being through the aging network.
5. Address inequities in risk factors among marginalized populations.
6. Engage the public about ways to reduce risk factors.

The identification of a risk reduction goal is the first step in driving behavior change at scale and is very encouraging. The three elements fundamental to driving behavior change in individuals and communities – knowledge, motivation and confidence – will also be fundamental for public policymakers so they will sustain their commitment.

## Three Foundational Elements Needed for Policy Leaders



**KNOWLEDGE.** Government leaders and policymakers can develop and expand upon evidence-based strategies grounded in current research with a population-wide perspective. They can use their resources and connections to spread that knowledge. The potential for policy to enhance public knowledge and awareness about brain-healthy behavior is great.



**MOTIVATION.** The ability to implement policy solutions that improve the health and well-being of people should be a powerful motivator for public health policymakers to take action. Increased scientific understanding of brain health, when linked to the tools of policy, can provide leaders with new opportunities to encourage healthy behavior and enhance public well-being. But brain health behavior change also shows promise in reducing economic burdens on individuals and society. It has been estimated that simply delaying onset of cognitive impairment by five years could cut the incidence rate of dementia in half. The prospect of reducing government expenditures provides a significant motivation to policymakers.



**CONFIDENCE.** Public health entities exist to implement structural efforts through policy, systems, and environments designed for population-based health impact. Policymakers can draw confidence from past examples of success implementing policies that have impacted health-related behaviors. Social norms *can* be changed. Seat-belt requirements, anti-smoking laws, age limits to purchase alcohol, bicycle helmet laws, and speed limits are all examples of laws and policies that have successfully influenced healthy behaviors.

# Examples of Successful Public Health Policies and Lessons for Supporting Brain-Healthy Behaviors

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## Seat Belts

Policymakers have long wrestled with questions about how to modify behavior to promote health and safety. Seat-belt requirements show that with persistent policy efforts, people will change their habits.

Before the 1960s, automakers did not generally include lap and shoulder belts in new cars. That changed with a 1968 law, but many Americans resisted using the restraints. It took tough new laws to make seat-belt use a normal part of driving.

Seat-belt use soared as seat-belt laws took effect in 29 states by the 1980s, according to the National Highway Traffic Safety Administration (NHTSA). In states that allow police to pull over drivers for not wearing them, 92 percent of riders in the front seat complied with seat-belt rules in 2019, according to NHTSA. The CDC's [strategies to increase seat-belt use](#) emphasizes laws, increased penalties, and police enforcement. According to the CDC, seat belts reduce serious injuries by half. They are credited with saving more than 374,000 lives between 1975 and 2017.

Technology provides a cautionary footnote to this story. In the early 1970s, the United States temporarily required automakers to produce cars that would start only if seat belts were buckled. While extremely effective, the stiff requirement prompted a political backlash, and the rule was dropped. Automakers have since included warning lights and (purposely) annoying chimes to remind people to buckle up. Research suggests that these efforts may not work with resistant drivers, a reminder that behavior change is difficult and policymakers may be most effective when approaching change through collaboration with their communities.

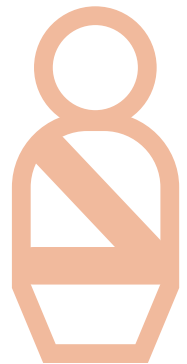
## Smoking cessation

Sometimes policies attempt to get people to stop doing something harmful – a difficult goal when people like what they are doing. Perhaps the most dramatic example is the effort to discourage smoking, which the CDC describes as the leading cause of preventable disease, death, and disability in the United States.

Beyond their addictive qualities, cigarettes have historically benefited from an image of being “cool.” For years, Hollywood glamorized smoking. Friends may choose to light up together. Tobacco companies continue to lure young people and others through social media, advertising, and packaging.

The lesson for brain health is that it requires a multi-dimensional long-term response to address ingrained habits and the social context in which they endure.

The CDC has worked to develop this kind of response. A [CDC web page](#) offers a toll-free number to reach a coach for guidance on how to quit smoking and get connected to helpful resources ([1-800-QUIT-NOW](#)). The online page offers encouragement: “Remember, even if you’ve tried before, the key to success is to keep trying and not give up. After all, more than half of U.S. adults who smoked have quit.” The CDC also tries to counter the social pressures that some may feel to smoke through another [web page](#) that provides tips from former smokers. These include the late Leonard Nimoy of Star Trek fame, who tells the audience he was an “Olympic championship smoker” who finally chose to quit after the birth of his first grandchild whom he wanted to protect from second-hand smoke.



The growing reach of anti-smoking laws and ongoing education efforts have had a significant impact. Approximately forty percent of adults were smokers for much of the 20<sup>th</sup> century, a level that has receded to 14 percent as of 2019. Yale University researchers estimated that smoking bans had already saved 8 million lives in the United States. While not all people will adopt behavior change, significant inroads to improve lives for millions can be accomplished.

## Recommendations for policymakers

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- 1. Set a goal to improve the public's brain health with a focus on building equity.** Measure progress along the way. Having a goal is a good way to focus attention on the things that are important, create a shared vision of how we can change as a society, and encourages the development and implementation of effective strategies.
- 2. Raise public awareness that people can take steps to promote their brain health.** Provide information to people that their behavior choices and lifestyles can foster or damage brain health and that cognitive decline is not inevitable. Make the benefits and action steps clear and achievable.
- 3. Deliver culturally appropriate messages for designated audiences.** You can't raise awareness unless people listen. Communications should be tailored to fit your chosen audiences and reflect their cultural perspectives. The message, the messenger, and the platform all make a difference.
- 4. Recognize that social determinants of health can shape cognitive well-being.** People are influenced by their social environment and opportunities in life. Remember that many policy areas, including education, influence brain health throughout the life course.
- 5. Fight the stigma of dementia.** The term "brain health" may encourage more positive action than "cognitive decline." Communications should try to eliminate fear and stigma, as these can result in people avoiding treatment and feeling helpless.
- 6. Think globally.** Collaborate. Emulate best practices and spread your insights through your networks. Researchers and advocates around the world are exploring how to best apply scientific findings on behavior change and brain health.
- 7. Use the tools of policy to make brain health a top priority.** Legislation, regulations, taxes and other fiscal measures, creation of guidelines, modeling desired behaviors, urban design, fostering cross-sector collaborations and environmental restructuring are among the levers to create incentives to encourage healthy habits and discourage bad ones.

# Discussion



**S**ociety has long recognized the potential health benefits of behavior change both for individuals and the larger communities in which we live.<sup>20</sup> Unsafe driving, smoking, drinking to excess, and unhealthy eating are among the many behaviors that have been targeted for change.

Researchers agree that small, easily achievable steps are the most realistic approach to achieving lasting improvements.<sup>21</sup> Benefits that are quick and tangible are more powerful than promises about the future. Research has identified major factors, such as an individual's beliefs about positive outcomes that would happen if they performed the behavior in addition to community and societal supports as important.<sup>22</sup> Science also points to the social environment – the immediate physical and social setting in which people live – as a powerful influence on individual behavior.<sup>23</sup> Some behavior change models suggest use of explicit and repeated triggers (or prompts as GCBH Expert Dr. BJ Fogg now calls them) to cue actions as a means to help sustain behaviors.<sup>24</sup>

Initiatives to accomplish behavior change have had mixed results, however. Achieving sustained behavior change is notoriously difficult. One fundamental challenge is that people do not always follow medical advice. Non-adherence rates for chronic illness regimens and for lifestyle changes are about 50 percent<sup>25</sup> and exercise can be especially challenging. Research has shown better adherence for medication use than for lifestyle change. Adherence rates for diet have been reported to be 65 percent versus only 19 percent for exercise. While we see that health care providers can inspire behavior change to promote health, it will take broader efforts to accomplish the comprehensive changes that are needed.

Use of established tools has been shown to make a difference at both the individual and collective levels. Health coaching has helped people manage chronic illness and improved adherence to medications.<sup>26</sup> Motivational interviews, in which a counselor works in collaboration with a client, have also yielded favorable results.<sup>27</sup> We have evidence that it is possible to foster more exercise in healthy inactive adults through use of behavior change techniques including “physical activity practice, gradually increasing intensity, using heart rate monitors, creating detailed plans, receiving instructions, using prompts, and rewarding oneself for progress may promote a change in physical activity behavior.”<sup>28</sup>



We need a greater understanding of how the brain works to form, sustain, and break habits – both good and bad. We also need more strategies to make use of existing knowledge, translating from research findings to real-world application. The challenge of transforming people’s health-related behaviors necessitates a cross-cutting approach across groups and multiple disciplines as well as among both the private and public sectors.

## An empowerment approach to brain health

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A successful model for behavioral change cannot assume that individuals will transform their habits by themselves. Broad societal factors affect our health and influence our actions. Conditions vary markedly within countries and throughout the world. For all these reasons, an empowerment approach that enables people to attain control of their well-being offers a promising path to enhancing brain health at the individual and collective levels.

To achieve gains in brain health, it is vital to recognize and address significant variations in resources and capacities among different communities. Too often, governments and social institutions provide insufficient support to the least advantaged. As one answer, civil society, including mission-driven organizations, provides a domain where people can work together to build capacity and achieve greater control, leading to a more equitable allocation of resources and skill that ultimately pays off in better health. By truly engaging with people and learning their needs, practitioners can make a difference and empower communities.

There have been many different frameworks suggested to support people’s adoption of healthy behaviors.<sup>29,30</sup> The empowerment model of society and health developed by GCBH expert Dr. Glenn Laverack lays out stages of empowerment starting with the individual and broadening to the family, interest groups, community-based organizations, social movements, and ultimately leading to social change that can support cognitive resilience. This overall framework for behavior change requires all these elements to come together starting from where people have a voice in the decision-making processes to achieve more control over their health.<sup>31</sup>

The GCBH believes that promoting brain health through empowering individuals will require driving three different major streams of action at the individual, community and public policy/society levels. Each level requires the relevant actors have the knowledge, motivation and confidence that the desired change is possible to support and sustain or empower the desired behavior changes.

## A policy imperative: Address health disparities

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Successful policies and strategies to promote brain health must recognize the challenges of different population groups and cultures, along with the particular challenges and barriers facing marginalized communities. Structural inequities in income, access to education, language barriers, and insurance status all affect access to health care and health itself. Disadvantaged racial and ethnic groups, migrant workers and many indigenous communities throughout the world face inequities that undermine health and create obstacles to cognitive resilience. Achieving greater brain health for the global population will be greatly aided if we address disparities in the **social determinants of health** including education, economic opportunity, safe housing and other crucial supports.<sup>32</sup>

Societies at the local, national, and international levels must find ways to better support their citizens who are at greatest risk, including utilizing tailored interventions. Additionally, health system infrastructure and preparedness play key roles in health promotion, and these vary widely from country to country and within countries and communities.

Individuals of lower socioeconomic status (SES) – as defined by education, income and occupation – are more likely to be diagnosed with chronic disease, reflecting an array of lifestyle factors and living conditions.<sup>33</sup> Even within the same country, citizens in urban and rural areas face different challenges regarding access to health care. Evidence suggests that older adults in rural areas may face obstacles to receiving mental health treatment due to various factors including the belief that it is not appropriate, a lack of mobility or transportation, and the scarcity of local services.<sup>34</sup>

## A nudge from behavioral science

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Policymakers are increasingly drawing upon principles from behavioral economics and psychology to persuade people to adopt healthier lifestyles and frame effective messages.<sup>35</sup> The “nudge” effect, which entails behavioral economics, political theory, and behavioral sciences, has gained traction as a way to influence good health decisions. One insight from the field is that people are more averse to loss than drawn to gains. Therefore, incentives are more tempting to individuals if they are presented in terms of loss.<sup>36</sup> This certainly has implications as people grow older. The fear of losing independence may be a strong motivator for people to adopt new healthy lifestyle behaviors throughout their life.

Crucial as they are, incentives can raise ethical issues. If the offer is too high, it may seem more like a coercive “shove” than a supportive “nudge.” Could it in any way disadvantage vulnerable individuals? To avoid such problems, some studies and programs offer “in-kind incentives,” such as exercise equipment or vouchers for health goods, rather than money alone.

Another ethical issue is the responsible use of resources. If monetary incentives are used and a lesser amount could have achieved the same end-goal, it can be argued that resources are not being spent in an ethically responsible manner.

## Building the environment: A key to healthy lifestyle choices

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A major theme of this report is that people do not choose their actions or develop their habits in a vacuum. We live our lives in a **built environment** – the buildings, neighborhoods, transportation systems, and other spaces outside of nature where we work, play, get around, and pursue all our interests.

So it follows that the way in which environments are designed can encourage or discourage healthy behavior. Environments can be structured in ways that encourage people to walk, stay physically active, think more deeply, and engage in their communities. **A key takeaway** from research in animal models is that enriched environments can aid neurogenesis and prevent cognitive decline when those environments promote sensory, motor, cognitive, and social engagement.

Basic features of the local infrastructure, like well-maintained sidewalks and convenient street design, make a difference. You are more likely to walk if a pleasant route is within easy reach, the area is safe, there

are places you can rest as needed, and the area has good lighting. It is easier to go out in winter if snow and ice are cleared. Smooth, well-kept pathways are more inviting than ones filled with cracks and litter. Mixed land use, including access to natural green spaces, may help people stay active, avoid social isolation, and decrease the risk of cognitive decline.

Studies pointing to a greater prevalence of dementia in rural areas than in urban areas strengthen the case that the local environment can play a role in brain health. Such findings call for further research, given all the variables involved, but they support the idea that the built environment matters for cognitive well-being.

Policymakers and planners have the potential to influence healthy behavior choices through careful environmental design. They should be equipped with this knowledge – and the resources to apply it – for the benefit of public health.

## Importance of effective health communication

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Scholars point to several important considerations for creating communications that promote brain-healthy behavior. Messages should be simple, grounded in scientific evidence, carefully targeted, and culturally attuned. They should make clear what action is desirable and why. Communications that motivate and inspire are more effective than traditional “advice-giving,” which can seem paternalistic and spark resistance.

By contrast, public service campaigns that rely on fear, such as those focusing on deaths from abuse of opioids, have often fallen short because they do not emphasize a clear, practical solution. Communications aimed at promoting the same actions amongst different groups of people will need different messages tailored to the different audiences in order to be successful. For example, it has been suggested that messages framed within the context of family may resonate better with individuals of lower socioeconomic status than messages crafted solely for individuals. The choice of messenger also matters. An initiative in the Rio Grande Valley in Texas found that local residents accepted nurses as credible ambassadors for brain health, enabling greater outreach to more people in the community. Ideally, communications programs should be integrated with other efforts, such as workplace initiatives, individual interventions, and public advocacy.

Examples of messages to promote brain-healthy behaviors already exist in the heart health context. The American Heart Association (AHA) reports success with an initiative it calls **Life’s Simple 7 Journey to Health**. The message focuses on seven goals, which it conveys in simple, succinct terms: stop smoking, eat better, get active, lose weight, manage blood pressure, control cholesterol, and reduce blood sugar. The effort aims at engaging adults in the workplace by enlisting employers in the effort. In a separate program, dubbed a “healthy living movement to inspire lasting change in your health and your life, one small step at a time,” **Healthy for Good**, the AHA reaches out to young people who watch YouTube, with a cheerful video in which the narrator says that healthy choices can be “happy tasty, fun” and that “a few little choices can add up to a big difference.” Collaborating with existing campaigns could build upon those initiatives demonstrating multiple benefits from the same behaviors while reducing duplication of efforts.

Successful communications campaigns convey not only *what* to think, but *when* and *where* to think about it, making timing and the right channels to reach the desired audiences who have the power to change outcomes critical considerations.

Finally, recognizing that change is more of a process than a single event, to achieve sustainability, an effective campaign must find ways to remind people to take action and reinforce the brain-healthy behaviors we are trying to encourage over an extended period of time through their life course.

# Conclusion

**A** chasm remains between what we are discovering about brain health and how little the public has applied this knowledge. This gap represents an opportunity for progress on an individual, community, and global scale.

As this report has noted, much remains to be learned about how to promote cognitive well-being most effectively. The GCBH message is that society can do more, and this effort should be a higher priority in nations around the world. Future progress rests on a foundation of knowledge that wholesome habits support healthy brains, confidence in the scientific evidence, and motivation to support cognitive well-being. Importantly, the burden of achieving this goal cannot fall on the shoulders of individuals alone. To maximize change, all sectors of society should contribute and will benefit. Strategies that empower people and communities to attain the resources they need for better health offer a promising direction that should be pursued vigorously.

Support of brain health should become an explicit goal of policy at the local, state, national, and international levels. This need exists throughout the world. Public health agencies need to be aligned toward this objective. According to the World Health Organization (WHO), the global cost of dementia was estimated at more than **\$1 trillion** in 2019 and growing rapidly. While of course prevention is the goal, delaying the onset of dementia by five years would reduce the incidence in half, enabling millions of people to live out their lives before they experience it.<sup>37</sup>

Evidence continues to emerge that such a goal is in reach. The WHO's Global Action Plan on the Public Health Response to Dementia 2017–2025 specifically set a global target for dementia risk reduction. Now multiple researchers are recommending specific policy actions be implemented to reduce risks for dementia.<sup>38</sup> This will require behavior change amongst all the audiences described in this report. Individuals, community leaders, and the private, non-profit and public sectors all have roles to play as do our public policies.

Innovative new initiatives, campaigns, and partnerships are required to raise public awareness of such possibilities, via efforts that must be culturally appropriate and grounded in science. We need clear and coherent messages that take the divergent recommendations for reducing risks to brain health and make them simple for individuals and communities to understand and implement. Large societal factors that influence people's lives – including social services, economic opportunities, work cultures, and the built environment where we live, work and play – must be transformed so that more people find it easy to make healthy decisions and carry them out over time.

The payoff will be a higher quality of life for all, along with more adults being able to continue making contributions to their families, communities, and societies across their lifespans.

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# Appendices

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## 1. Participants, Liaisons and List of Additional Resources

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Members of the Global Council on Brain Health are independent health care professionals and experts from a variety of disciplines. The issue specialists and Governance Committee members formulated these recommendations, and the Governance Committee approved them.

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## Liaisons:

Other experts from relevant public agencies and non-profit associations reviewed the paper and provided guidance and feedback to help shape the document. Grateful acknowledgement goes to:

- **Fiona Carragher**, Alzheimer's Society (UK)
- **Xi Chen, PhD**, Yale University
- **Mitchell Elkind, MD**, American Heart Association and Columbia University
- **Eva Jeffers, MPH, CHES**, Centers for Disease Control and Prevention (CDC)\*
- **Lisa McGuire, PhD**, Centers for Disease Control and Prevention (CDC)\*
- **Gladys E. Maestre, MD, PhD**, The University of Texas Rio Grande Valley
- **Susan Mitchell, PhD**, Alzheimer's Research UK
- **Molly Wagster, PhD**, National Institute on Aging (NIA)\*
- **Joan Weiss, PhD, RN, CRNP**, Health Resources and Services Administration (HRSA)\*

*\*Participation in this activity by these individuals does not necessarily represent the official viewpoint of the U.S. Department of Health and Human Services (ACL/CDC), the National Institutes of Health, or the National Institute on Aging.*

## List of Additional Resources:

- **AARP International**  
<https://www.aarpinternational.org/resources/healthy-aging>
- **Centers for Disease Control and Prevention (CDC) – Information on Chronic Diseases**  
<https://www.cdc.gov/chronicdisease/center/nccdphp/how.htm>
- **National Institute on Aging (NIA) – Science of Behavior Change**  
<https://www.nia.nih.gov/research/dbsr/science-behavior-change-sobc>

- **Staying Sharp**  
<https://stayingsharp.aarp.org/>
- **Alzheimer's Research UK – Think Brain Health**  
A campaign to empower the public to think about their brain health and provide simple, easy tips to help them get started. In addition, the charity funds community groups to adapt the campaign to make it more culturally relevant to a broader range of ethnic minority groups.  
<https://www.alzheimersresearchuk.org/brain-health/think-brain-health/>
- **The Wharton School, University of Pennsylvania – Behavior Change for Good**  
<https://bcfg.wharton.upenn.edu/>

## Books

- ***Get It Done: Surprising Lessons from the Science of Motivation* by Ayelet Fishbach**  
<https://www.ayeletfishbach.com/>
- ***Tiny Habits: The Small Changes that Change Everything* by BJ Fogg**  
<https://tinyhabits.com/book/>
- ***How to Change: The Science of Getting from Where You Are to Where You Want to Be* by Katy Milkman**  
<https://www.katymilkman.com/book>
- ***The Power of Fun and How to Break Up with Your Phone* by Catherine Price**  
<http://catherineprice.com/>

## 2. Process Used to Produce the Recommendations

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This paper is not the usual consensus report created by the GCBH. We developed a new process to meet the needs of the time and topic. Because it was not possible to meet in person during the pandemic, we have modified our standard approach and held four virtual convenings during the summer of 2021 and heard from a variety of experts on the topic described in the next section below.

The Governance Committee members issuing the recommendations are independent health experts representing diverse, relevant expertise across three continents in the fields of epidemiology, psychology, public health, neurology, psychiatry, geriatrics, cognitive neuroscience, neuropsychology, pharmacology, medical ethics, health policy, and neurodegeneration. Staff prepared a preliminary draft based upon the first four webinars, and issue experts convened in October 2021 to discuss open questions, subsequently reviewing the draft.

Seven issue specialists were selected to participate with the GCBH on behavior change because they particularly focused on different aspects of behavior change and older adults. The GCBH governance committee met virtually with six of them to discuss the state of the science as of October 2021. A second draft was created and reviewed by the Governance Committee and sent to the issue specialists for their comments.

Numerous liaisons from civic and non-profit organizations with relevant expertise in brain health, behavior change, research, health care, policy and aging reviewed the third draft and provided helpful input and technical feedback during the refinement of the draft recommendations.

The GCBH Governance Committee reviewed and finalized the document during subsequent email exchanges. The Governance Committee approved the recommendations on March 11<sup>th</sup>, 2022.

### 3. GCBH 2021 Behavior Change Webinar Series

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The GCBH hosted a four-part webinar series in July and August 2021 that covered different aspects of behavior change. The following topics were covered: (1) Communicating and Promoting Brain Health Behavior Change, (2) Implementing Brain Health Behavior Change – Lessons Learned, (3) Health Economics and Brain Health Behavior Change, and (4) Barriers to Implementing Health Behavior Change and Building Equity. Webinar recordings and presentations are available [on the GCBH website](#).

Presentations from the following experts were considered:

- **Amy Bleakley, PhD, MPH**, University of Delaware, Department of Communication (lessons from public health)
- **Mitchell Elkind, MD, MS MPhil**, American Heart Association and Columbia University (lessons from cardiovascular health)
- **Bill Novelli**, Georgetown University's McDonough School of Business (lessons from smoking)
- **George W. Rebok, PhD**, Johns Hopkins Bloomberg School of Public Health (Active Trial)
- **Sherry Willis, PhD**, University of Washington Seattle (Active Trial)
- **Ayesha Sherzai, MD and Dean Sherzai, MD, PhD**, Brain Health and Alzheimer's Prevention Program at Loma Linda University
- **Kathy Washa and Rachel Lazarus, PhD**, AARP Staying Sharp
- **Xi Chen, PhD**, Yale University (The Economics of Cognitive Aging)
- **Ayelet Fishbach, PhD**, University of Chicago Booth School of Business (How to Motivate)
- **Fayron Epps, PhD, RN**, Emory University, Nell Hodgson Woodruff School of Nursing (Alter program A Dementia Friendly Congregation Program for Black Churches)
- **Gladys E. Maestre, MD, PhD**, The University of Texas Rio Grande Valley (Barriers to Implementing Brain Health Behavior Change and Building Equity: Call to Action)
- **Jason Resendez**, UsAgainstAlzheimer's Center for Brain Health Equity (Place and Brain Health Equity)

### 4. AARP Staying Sharp Overview

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The AARP **Staying Sharp program** is a holistic, lifestyle-based approach to brain health, following guidance from the Global Council on Brain Health. It empowers people to take control of their brain health. The program features more than 1,500 activities and challenges, meditations, recipes, videos and games. It also offers a brain health assessment for a small additional fee. With an emphasis on the Six Pillars of Brain Health — Being Social, Engage Your Brain, Manage Stress, Ongoing Exercise, Restorative Sleep, Eat Right, — Staying Sharp translates the latest brain health science into consumer-friendly content that both educates and provides guidance on how to create healthy habits and support activities of daily living. In addition to a web-based program, Staying Sharp users can download an app that allows them to participate on the go.

Users are encouraged to start with a brain health assessment, which provides them insights into aspects of both their brain and lifestyle behaviors. Based on the results of their assessment, users receive personalized recommendations designed to help them incorporate the Six Pillars into their regular habits.

The platform features interactive challenges on memory, problem-solving, mental well-being, everyday reasoning, exercise and more. All users start with a pre-quiz and are guided through steps that help them learn the latest science, practice new skills and discover ways to apply those skills into their lives.



Staying Sharp is available to nearly 40 million AARP members as a member benefit and can also be purchased as a separate program. It is available in both English and Spanish. Those who are active in Staying Sharp can also receive AARP Rewards points. AARP Rewards is an AARP loyalty program that gives points for participation in specific learning activities. The points can be redeemed for gift cards, discounts, sweepstakes entries and more.

For more on Staying Sharp, visit <https://stayingsharp.aarp.org/>

## 5. Disclosure Statement of Potential Conflicts of Interest

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Twenty of the GCBH experts – all of the issue specialists and governance committee members – participating in the formulation of this report were asked to disclose potential conflicts of interest. Seventeen attested they had no conflicts of interest. Dr. Lavoie disclosed receiving prior grant funds, ad board and consultation fees, as well as speaking fees from pharmaceutical companies in which she holds no commercial interests. Dr. Petersen disclosed consulting with several pharmaceutical companies. Dr. Yaffe disclosed serving on a data and safety monitoring board for a pharmaceutical company. The authors are unaware of any affiliation of the experts that affected the objectivity of this paper and its recommendations. These disclosures are available upon request by contacting staff of the Global Council on Brain Health.

## 6. Funding

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AARP provided the funding and staffing for the convening of the webinars, panel discussion and formulation of this recommendation paper. AARP provided modest honoraria for the experts participating on the issue expert panel. Liaisons did not receive reimbursement or honoraria.

## 7. Selected References

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## 8. List and Links to Other GCBH Reports

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All reports are available for download at [GlobalCouncilOnBrainHealth.org](https://GlobalCouncilOnBrainHealth.org).

- [The Brain-Body Connection: GCBH Recommendations on Physical Activity and Brain Health](#)
- [The Brain Sleep Connection: GCBH Recommendations on Sleep and Brain Health](#)
- [The Brain and Social Connectedness: Recommendations on Social Engagement and Brain Health](#)
- [Engage Your Brain: GCBH Recommendations on Cognitively Stimulating Activities](#)
- [Brain Food: GCBH Recommendations on Nourishing Your Brain Health](#)
- [Brain Health and Mental Well-Being: GCBH Recommendations on Feeling Good and Functioning Well](#)
- [The Real Deal on Brain Health Supplements: GCBH Recommendations on Vitamins, Minerals, and Other Dietary Supplements](#)
- [The Brain-Heart Connection: GCBH Recommendations to Manage Cardiovascular Risks to Brain Health](#)
- [Preserving Your Brain Health During Illness or Surgery: GCBH Recommendations to Prevent and Treat Delirium](#)
- [Music on Our Minds: The Rich Potential of Music to Promote Brain Health and Mental Well-Being](#)
- [COVID-19 and Brain Health: The Global Council on Brain Health: Recommendations on What to Do Now](#)
- [Boosters for Joy: A Guide on Ways to Connect](#)

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