

THE EPOCH TIMES

MIND &

BODY



90%

90 percent of adults don't eat sufficient vegetables on a daily basis.

ALL IMAGES BY GETTY IMAGES

Prescribing Veggies: A Billion-Dollar Lifesaver?

Prescriptions for fruits and vegetables could revolutionize diabetes care and slash health care costs



Power Plants

Produce programs aim to get people eating higher quality foods, specifically fruits and vegetables.

By Sheramy Tsai

Swapping pills for peaches and medication for mushrooms could ward off heart attacks and strokes, elevate quality of life, and deliver billions in health care and productivity savings, according to a study published in the *Journal of the American Heart Association*.

In other words, “an apple a day” might be a fresh, economical answer to the United States’ health care crisis.

The Core of the Study—Could Food Fix Health Care?

The research was conducted through the Diabetes, Obesity, and Cardiovascular

Disease Microsimulation model. This computer simulation tool allowed researchers to create a data-driven model of what a national produce prescription program could look like and what its effects would be.

Produce programs aim to get people eating higher quality foods, specifically fruits and vegetables, which offer a complex nutrient profile of synergistic compounds, vitamins, minerals, fiber, and more.

The proposed program would serve free or discounted fruits and vegetables to eligible diabetics aged 40 to 79. It’s designed to resolve the connection between Type 2 diabetes and elements

such as lower socioeconomic status, food insecurity, and the shortage of nutritious options for people in urban areas that don’t have nearby supermarkets with fresh produce.

The simulation used data from the Centers for Disease Control and Prevention’s (CDC’s) National Health and Nutrition Examination Survey from 2013 to 2018 and included data on the estimated effects of various interventions and diet-disease effects from meta-analyses of several studies. The simulation included policy- and health-related costs.

▲ When most of our diseases have key nutrition-related causes, the cure is using food as medicine, a growing chorus of researchers are finding.

Continued on Page 7

MICROBIOME

New Research Validates Autism’s Link to Gut

Comprehensive study links clear patterns in gut bacteria profiles to autism, pointing to new treatments

By Amy Denney

Researchers have identified a microbial signature for autism spectrum disorder, a critical finding that offers clarity about how the gut microbiome influences this neurological syndrome.

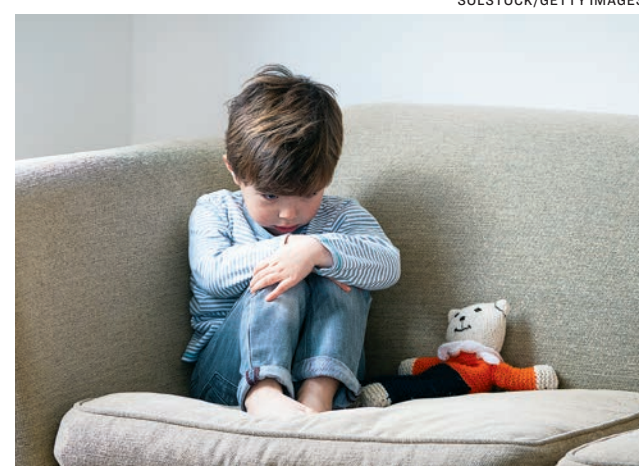
The data-driven study published by 43 researchers challenges the idea that autism is a primarily genetic condition and suggests that environmental factors may be behind the sharp rise in the debilitating condition.

The trillions of microbes (bacteria, viruses, fungi, and other microorganisms) that populate the gut microbiome are the basis of that microbial signature. Other research

has found that having more microbes and greater diversity is associated with health and lower disease risk. Among other tasks, gut bacteria metabolize fiber and create metabolites that facilitate digestion, brain functions, and more.

The study involved reanalyzing 25 previously published datasets to find autism-specific metabolic pathways that could be linked to particular gut microbes. Originated at the Simons Foundation’s Autism Research Initiative (SFARI), the meta-analysis was published June 26 in *Nature Neuroscience* and aligns with a recent long-term study

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SOLSTOCK/GETTY IMAGES

▲ A growing number of young children are being diagnosed with autism spectrum disorder.



Studies find cellphone radiation may be linked to infertility, cancer, and inflammation.



GROWING CONCERN

180

international scientists and doctors from

36

countries warned about the dangers of 5G in a 2017 petition to the European Union.

OSCAR WONG/GETTY IMAGES

EMF

The Invisible Hazard

PART 1 WHY ARE SCIENTISTS CONCERNED ABOUT 5G?

The arrival of 5G heralds a significant rise in cellphone radiation

In this series, we will explore the omnipresent impacts of electromagnetic fields—from common home electronics to 5G—and their impacts on the brain and body.



Previous Parts:
TheEpochTimes.com/EMF

By Marina Zhang

Since Motorola introduced the first cordless handheld phone in the early 1970s, cellphones and wireless devices have become ingrained in our lives. They've evolved significantly, from basic texting to streaming videos and games.

Telecommunication networks, which use electromagnetic radiation to transmit information, have also advanced from the

now-defunct 1G, which only supported voice calls, to the latest fifth-generation technology standard (5G), which promises high-speed data transfers.

However, alongside these advancements, concerns have emerged regarding potential health effects, with 5G being particularly controversial.

While telecom companies and regulatory agencies assert that no scientific evidence links cellphone radiation to health problems, many experts disagree. In 2017, 180

international scientists and doctors petitioned the European Union to conduct an independent assessment of the potential health risks associated with 5G. But how severe are these risks?

Doubts About Wireless Telecommunication Even Before 5G

Studies conducted since the 1970s have suggested possible links between cellphone radiation and health issues such as infertility, neuropsychiatric problems, cancer, and inflammation.

Questions About Funding

However, studies on the effects of cellphone radiation have yielded inconsistent findings, with some variations depending on the funding sources of the studies.

Research professor Henry Lai from the University of Washington had previously examined 200 studies on the biological effects of cellphone-related radiation. He found that approximately half of the studies reported no biological link, while the other half indicated a possible association.

"When you look at the non-industry sponsored research, it's about 3-to-1—3 out of ev-

ery 4 papers shows an effect," Mr. Lai said. "Then, if you look at the industry-funded research, it's almost opposite—only 1 out of every 4 papers shows an effect."

Animal Studies

Animal studies have implicated potential health risks in 2G, 3G, and 4G technologies.

A study published in 2018 by the National Institute of Environmental Health Sciences found that high levels of 2G and 3G radiation were associated with an increased risk of cancer and adverse effects on DNA in rats. The study found that rats and mice exposed to that type of radiation exhibited DNA damage in their brains and blood cells, clear evidence of heart tumors, and lower birth weights in the case of prenatal exposure.

But the study acknowledged limitations due to the use of abnormally high radiation levels that don't reflect real-life exposure scenarios.

"The exposures used in the studies cannot be compared directly to the exposure that humans experience when using a cellphone," said John Bucher, a senior scientist at the National Toxicology Pro-

gram and co-author of the study.

However, increasing exposure levels can expedite research on long-term risks without requiring lifelong studies, Martin Pall, professor emeritus of biochemistry and medical sciences at Washington State University, told The Epoch Times. Still, most studies haven't found conclusive evidence linking cellphone radiation to adverse health effects.

Brain Tumors

Studies on cellphone radiation published before the 5G rollout in 2019 demonstrated that placing phones near the ear resulted in the absorption of radiation by brain tissues inside the skull.

Some research has suggested a potential correlation between high cellphone usage and glioblastoma, a type of brain cancer. According to a Swedish analysis, long-term cellphone users, those who've had phones for more than 10 years, face an elevated risk of developing benign tumors. Notably, the risk is highest on the side of the head that comes into contact with the phone.

Nevertheless, the causal relationship remains uncertain.

Studies investigating residents living near cellphone towers and base stations have reported complaints of neuropsychiatric problems, including headaches, memory issues, dizziness, depression, and insomnia.

Is 5G Worse Than Its Predecessors?

Is 5G worse than its predecessors? The short answer is that scientists don't know.

While 2G, 3G, and 4G transmit radio frequency and microwave radiation, 5G emits millimeter wave radiation.

Millimeter wave radiation differs from microwave and radio wave radiation, operating at a higher frequency and facilitating faster signal transmission. However, the potential health effects of millimeter wave radiation remain unknown because of a lack of government-funded studies.

What scientists do know is that, unlike microwave cellular radiation, millimeter waves can't deeply penetrate the body. Consequently, many scientists believe that 5G is safe.

While millimeter waves offer faster speeds, their high frequency makes them weaker and thus susceptible to blockage by leaves, rainwater, and walls. To ensure complete coverage, telecommunication companies must deploy more 5G antennas. However, since these antennas also transmit 2G, 3G, and 4G signals, the extensive rollout of 5G poses a potential health risk.

"What they're doing is they're rolling out antennas every roughly 100 meters in urban areas," Magda Havas, who has a doctorate in environmental toxicology, told The Epoch Times.

Ms. Havas, who's an emerita professor

specializing in the health effects of electromagnetic radiation and is a signatory of the EU moratorium, expressed concerns regarding 5G rollouts.

"People are going to be exposed to much higher levels of the normal [3G and 4G] frequencies that they were already exposed to, plus the additional millimeter waves that have not been tested for any kind of long-term health effects," she said.

Health Effects of 5G Millimeter Waves

The health effects of 5G are still a topic of debate, but Mr. Pall and Ms. Havas suggest that its millimeter radiation might have the potential to induce health issues.

Although 5G's millimeter waves may be unable to penetrate the body, they can still be absorbed by the skin. Ms. Havas said that ultraviolet lights don't penetrate the body but can cause skin melanomas. A study conducted in 2020 on 5G radiation demonstrated that the waves could penetrate the skin by approximately 0.9 millimeters when transmitted from 10 centimeters (4 inches) away.

Although this depth is shallower compared to 4G and 3G, the radiation intensity was significantly higher. Furthermore, 0.9 millimeters may not even be considered

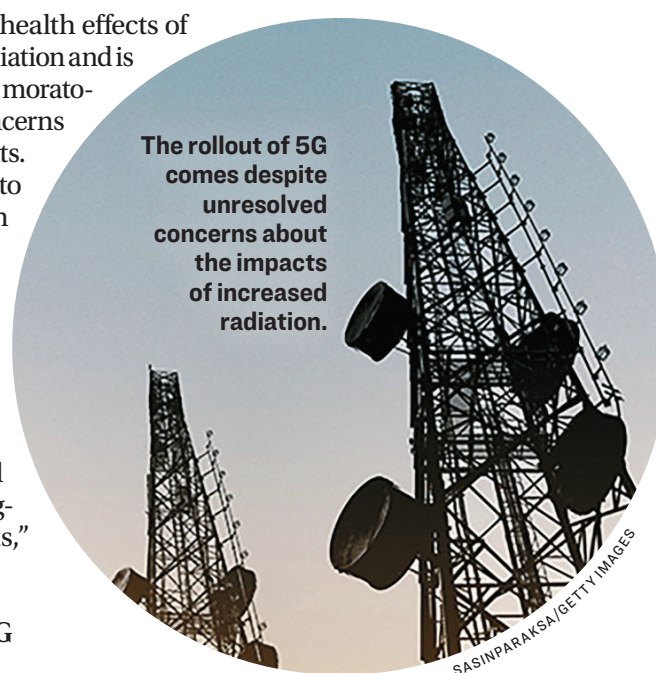
shallow. According to a 2008 study on millimeter waves, a penetration depth of 0.65 millimeters is sufficient "to affect most skin structures located in the epidermis and dermis."

"It's been shown in a number of different studies that if you look at different kinds of cells—and we have many different types of cells in our body—you'll find that some cell types are much more sensitive to EMF (radiation) than others," Mr. Pall said. He further emphasized that biological heterogeneity must be considered and that simple physics can't be used to make accurate predictions about biological effects.

While the long-term health effects of 5G remain unknown, Mr. Pall has conducted research that shows millimeter waves can trigger biological responses by altering the cells' electrical charges.

As telecommunications networks evolve and 5G promises faster speeds and greater connectivity, the need to understand the effects on human health becomes increasingly important. The debate surrounding the potential health effects of 5G technology continues to be a subject of concern and controversy.

The rollout of 5G comes despite unresolved concerns about the impacts of increased radiation.



3G transmits data at lower speeds and uses a lower frequency signal. 3G waves have been known to cause neurological problems in individuals, as well as cancer and inflammation.



4G is mostly used by mobile devices, such as smartphones and tablets. 4G waves emitted from mobile devices can potentially penetrate through the skull into the brain.



5G 5G waves don't travel as far so they need a far greater number of transmission cells. While 5G waves don't penetrate the body as deeply, they are not well studied for their health effects.

FOOD AS MEDICINE

Pears Fight Cancer, Diabetes, and Heart Disease

This nutritious fruit is rich in antioxidants, phytonutrients, polyphenols, vitamins, and more

By Emma Suttie

Late summer and mid-autumn are graced by an abundance of pears—an iconic fruit grown and loved worldwide. Pears are said to have been sacred to two goddesses in Greek mythology, Hera and Aphrodite.

Originating in the foothills of the Tien Shan mountain range in Western China, pears, or *Pyrus communis*, are part of the Rosaceae plant family, which includes many of our favorite fruits, including apples, plums, cherries, and peaches. Because of pear trees' ability to withstand cold temperatures, they can be harvested year-round in many areas of the world, and thus are now grown on nearly every continent on Earth.

Because of their deliciousness and abundant medicinal properties, pears have been used as food and medicine by cultures going back thousands of years.

A Highly Nutritious Fruit

Pears are loaded with nutrition, containing vitamins C and K, copper, potassium,

manganese, folate, and magnesium. They're also low in calories. One medium-sized pear (about 178 grams) has about 100 calories, 0.2 grams of fat, just under a gram of protein, about 27 grams of carbohydrates, and about 5.5 grams of fiber.

Pears are high in antioxidants that scavenge free radicals from the body to help prevent oxidative stress that can damage DNA and accelerate aging. They contain phytonutrients including flavonoids that help lower inflammation, which is thought to be the root of some of our most destructive diseases, such as cancer, diabetes, heart disease, rheumatoid arthritis, and Alzheimer's. Rich in polyphenols, pears are a good food source for protection against certain cancers, cardiovascular diseases, and neurodegenerative conditions.

There are more than 3,000 varieties of

pears available throughout the world, though only 10 are grown commercially in the United States. Each variety offers its own unique color, taste, and texture. Many of the phytonutrients and other antioxidants in pears are found in their skins, so eating pears with the skin/peel on is a great way to maximize their health benefits.

The 10 commercial varieties of U.S.-grown pears include:

- Bartlett
- Anjou (green and red)
- Bosc
- Asian
- Concorde
- Comice
- Starkrimson
- Forelle
- Clapp
- Seckel



People with diabetes can enjoy this sweet fruit without worrying too much about blood sugar levels.

Protect Against Cancer

Pears contain compounds that are thought to be protective against cancer, such as anthocyanins. Anthocyanins are water-soluble flavonoids with a range of pharmacological effects, including the prevention of cardiovascular disease,

obesity control, and anti-tumor activity, according to a review in the British Journal of Pharmacology.

Pears also contain chlorogenic acid, which can exert anti-cancer activity by inhibiting the cell cycle, triggering apoptosis (normal cell death), and suppressing the proliferation of cancer cells.

A diet rich in fruits, including pears, has been shown to protect against certain cancers, especially of the lung and stomach.

A meta-analysis looked at the association between fruit and vegetable intake and lung cancer risk and found that an increase in fruit intake was associated with a decreased lung cancer risk in current and former smokers. The authors concluded that these findings "might have considerable public health significance for the prevention of lung cancer through dietary interventions."

A study, using a pooled analysis of data from 25 studies, looked at the associations between fruit and vegetable consumption and the risk of stomach cancer. They found that gastric cancer risk was lower with a higher intake of fruits.

Some studies suggest that flavonoid-rich fruits such as pears may be protective against hormone-related cancers, including breast, ovarian, endometrial, thyroid,

and testicular cancer. A systematic review and meta-analysis found that an increase in flavonoid-rich foods such as pears is associated with a decreased risk of breast, ovarian, and endometrial cancer.

The relationship between fruit and vegetable consumption and the prevalence of breast cancer was established in an analysis that concluded that a high intake of fruit was associated with a reduced risk of overall, postmenopausal and estrogen and progesterone-receptor-positive (ER+/PR+) and negative (ER-/PR-) breast cancer.

Improve Heart Health

Pears contain ample fiber—important for lowering cholesterol and other fats—which helps to protect us against cardiovascular disease. Glutathione, an antioxidant found in pears and other fruits, can help prevent high blood pressure and stroke. In one study, participants who received glutathione and acetylcholine infusions increased the diameter of their blood vessels as well as blood flow, which, combined, significantly reduced coronary risk factors.

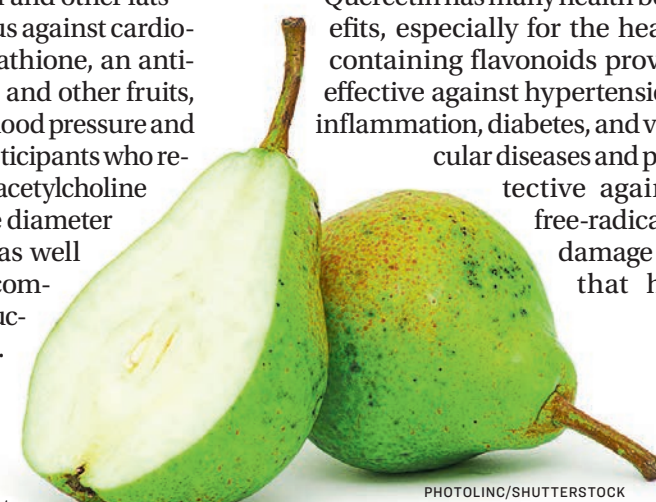
The pectin in pears also helps to lower cholesterol levels. Pectin is a type of water-soluble fiber found in most plants. In addition to lowering cholesterol, it

also helps keep things moving smoothly through the bowels and aids digestion.

The results of a prospective study, published in the American Journal of Epidemiology, showed that after following adults over a 15-year period, higher consumption of fruits and vegetables was associated with a lower risk of all-cause mortality, cancer, and cardiovascular disease. The study states that their findings support the general health recommendations to include five to nine servings of fruits and vegetables in our diet daily.

The peel of pears contains an antioxidant called quercetin—a natural pigment present in many fruits and vegetables.

Quercetin has many health benefits, especially for the heart, containing flavonoids proven effective against hypertension, inflammation, diabetes, and vascular diseases and protective against free-radical damage that has



Many of the phytonutrients and other antioxidants in pears are found in their skins.

been linked to many chronic diseases.

Reduce the Risk of Type 2 Diabetes

Pears naturally have a low glycemic index, meaning that they have a minimal effect on blood sugar. Other low glycemic index foods include green vegetables, most fruits, chickpeas, and lentils.

A cohort study following 9,665 U.S. adults between the ages of 25 and 74 over 20 years aimed to determine whether the consumption of fruits and vegetables was associated with the development of diabetes. The researchers found that eating five or more servings of combined fruits and vegetables daily significantly reduced the risk of developing diabetes.

Pears help to reduce the risk of diabetes due to their high fiber content and anthocyanin-rich skins. Anthocyanins give pears their color, particularly the red varieties. Because of their high fiber and low carbohydrate content, pears release sugars slowly into the bloodstream, meaning that those with diabetes can enjoy this sweet fruit without the negative consequences on blood sugar levels.

A large study published in The American Journal of Clinical Nutrition that followed more than 200,000 people looked at whether dietary intake of flavonoids such as flavonols and anthocyanins were associated with the risk of Type 2 diabetes in U.S. adults. The participants were free of diabetes, cardiovascular disease, and

cancer at the beginning of the study. The researchers found that the consumption of anthocyanin-rich foods—particularly blueberries, apples, and pears—was associated with a lower risk of Type 2 diabetes.

Final Thoughts

Packed with nutrition, pears offer healing benefits that can help protect us from many prevalent diseases. They have also been shown to reduce inflammation, improve digestion, and even help you lose weight. They're also high in vitamin C, which helps boost the immune system, low in fat and carbohydrates, and an excellent source of fiber.

There are many different ways to eat pears—poached, roasted, or cooked into various desserts—and of course, you can always eat them fresh off the tree. Just remember that many of the phytonutrients and other antioxidants are in the skin, so wash them well and eat the peel, too.

CORRECTION

The article "Niacin: The Powerhouse Vitamin You're Not Hearing About," published in the July 26 edition, incorrectly described niacin's side effects. This nutrient can cause skin flushing, which isn't harmful but is visible and may be uncomfortable to some. The Epoch Times regrets the error.



The key causes of shoulder pain are unhealthy functional patterns and muscle weakness.

Easy Exercises to Combat Chronic Pain

PART 9 MUSCULAR IMBALANCES CAN CAUSE CHRONIC SHOULDER PAIN

These five exercises can help resolve shoulder pain and restore movement, strength, and balance

In this series, "Easy Exercises to Combat Chronic Pain," occupational therapist Kevin Shelley focuses on common issues associated with chronic pain and simple and exercises to strengthen weak muscles and enhance joint mobility, with the goal of helping you become pain-free.



Previous Parts:
TheEpochTimes.com/Chronic

By Kevin Shelley

Your shoulders are some of the busiest joints in your body, combining extensive flexibility with surprising strength. All that ability is because we need them for the heavy jobs of daily life. Unfortunately, that work can lead to pain. While shoulder pain is highly correlated with certain occupations and older age, it's also common in the general population and can often be resolved with exercise. "Shoulder pain is something we see often in the clinic, and many of our shoulder patients have been struggling

with pain for an extended period," said Elke Velz, a certified strength and conditioning specialist. Ms. Velz is a performance trainer at the Virginia Sport and Spine Institute specializing in functional movement restoration and maintenance.

Causes of Chronic Pain in Healthy Shoulders

Chronic pain is pain that lasts for more than 12 weeks. It can remain at low levels for years or demonstrate a progression over time. "I get clients that ask very specific questions about shoulder pain without understanding the complexities of the shoulder," Ms. Velz said.

With shoulders, the problems that eventually result in pain don't necessarily originate where the pain is actually located. The two primary contributors to shoulder pain are unhealthy functional

patterns and muscle weakness.

Functional Patterns

The shoulders are designed to move a lot. Unfortunately, technology and the modern workplace can limit activity in the shoulders, causing chronic pain to develop because of joint tightness and muscle weakness. Pain isn't usually caused by a singular incident but by long-standing muscular imbalances.

The shoulders coordinate with the upper spine during functional task performance, and decreased mobility in the thoracic spine can lead to overcompensation in the shoulders and subsequent pain.

"I always go back to the thoracic area

of the spine, also known as the T-spine. This area must be addressed proactively in order to pave the way for successful shoulder outcomes," Ms. Velz said.

Muscle Weakness

The shoulder relies on smooth coordination between bones, muscles, and ligaments. Muscular weakness, especially in stabilizing muscles within the rotator cuff, can allow the joint to fall out of proper alignment during movement and cause pain. Weak muscles are also more susceptible to strains, compounding the problem. The rotator cuff is a work of art. It's made up of the supraspinatus, infraspinatus, teres minor, and subscapularis muscles. It attaches the humerus to the shoulder blade and stabilizes the shoulder while allowing for an extensive range of motion.

Kevin Shelley is a licensed occupational therapist with over 30 years of experience in major health care settings. He is a health columnist for The Epoch Times.

NEXT WEEK Strengthen the soft tissues of the elbow to resolve pain.

THE BONES AND MUSCLES OF THE SHOULDER

The shoulder is a complicated structure made up of three main bones: the clavicle, scapulae, and humerus of the arm.

The clavicles, or collarbones, in conjunction with the scapulae (shoulder blades), form what's called the shoulder girdle. The shoulder girdle also serves as the primary attachment point for the arms. The humeri, the large upper bones of the arms, join

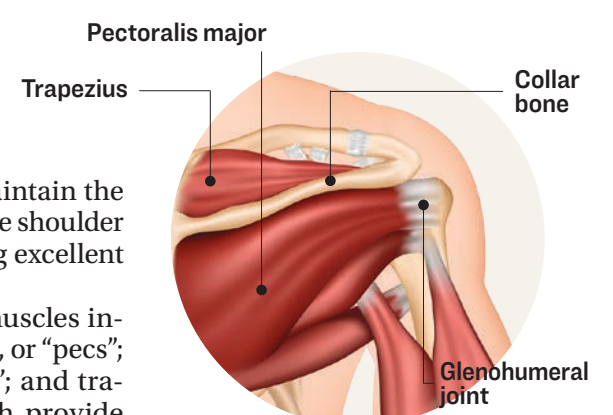
with the shoulder girdle at the glenohumeral joints.

The muscles and bones of the shoulder are all highly movable individually but work together to provide stability by allowing the associated muscles to coordinate tension among them.

Because the shoulder is a highly mobile structure, it relies heavily on the rotator cuff, which is a series of four muscles that surround and stabilize

the shoulder and help maintain the structural alignment of the shoulder girdle while also allowing excellent movement.

Other large shoulder muscles include the pectoralis major, or "pecs"; latissimus dorsi, or "lats"; and trapezius, or "traps," which provide strength and stability during arm movements.



Our shoulders are designed to move but our keyboard culture keeps them still and leads to stiffness.

EXERCISES FOR CHRONIC SHOULDER PAIN

T-spine exercises focus heavily on these critical areas and can help reduce or eliminate pain. They move the T-spine through its full range of motion while actively engaging the muscles that stabilize and move the T-spine

1 T-SPINE ROTATION

This exercise allows the body to relax into full T-spine rotation and should be paired with deep breathing in order to signal the body to relax.

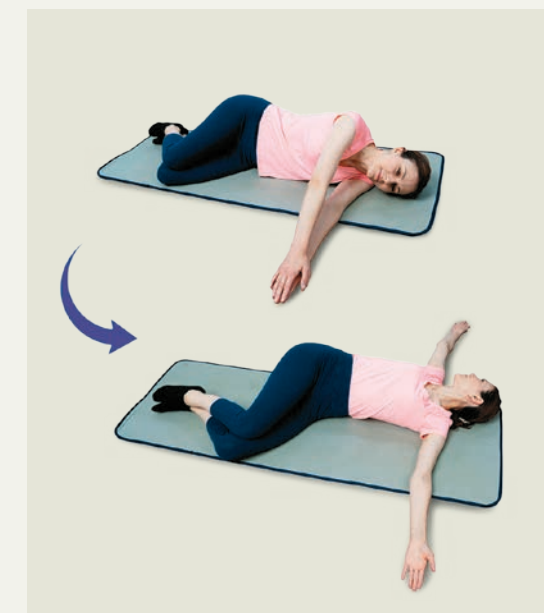
Step 1: Lie on the floor on your side.

Step 2: Bend your hips and knees to approximately 90 degrees, and place your arms out straight in front of you with your palms together and one hand on the floor.

Step 3: Take a deep breath, letting it out as you sweep your upper arm in an arc over your body until it touches the floor on the other side or until you extend it as far as you can. Follow the movement with your head. Hold for 10 seconds, breathing slowly, then return to the starting position.

Step 4: Try to do 10 sets of rotations on one side; repeat on the other side.

When the T-spine rotation is in the "open" position, both shoulder blades should be in contact with the floor. If you can't get all the way down, continue to relax into the movement, allowing your muscles to stretch further. Don't force the exercise, and pay careful attention to what your body is telling you. Avoid provoking severe pain.



1

2 THREAD THE NEEDLE

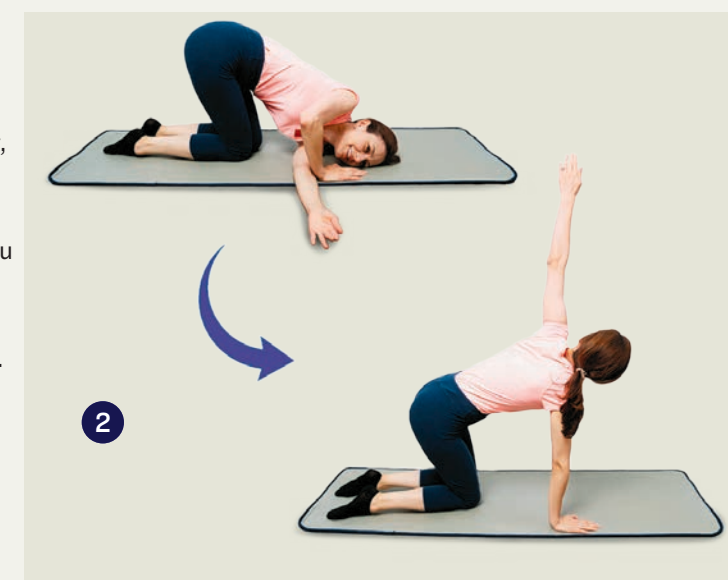
This exercise takes the mobility from T-spine rotations and adds muscular strengthening. During this exercise, one side of your body will be stable and unmoving while the other is in motion.

Step 1: Assume an "all-fours" position on the floor with your arms straight, your knees directly below your hips, and your back neither sagging nor arching.

Step 2: Keeping one hand on the floor, sweep the other arm underneath you until your shoulder makes contact with the ground.

Step 3: Return to the "all-fours" position and then sweep your arm toward the ceiling, turning your head to follow the movement. Hold for 10 seconds.

Step 4: Return to the "all-fours" position and repeat movements. Do 10 total repetitions, then perform the same activity on the other side.



2

3 FARMER'S CARRY

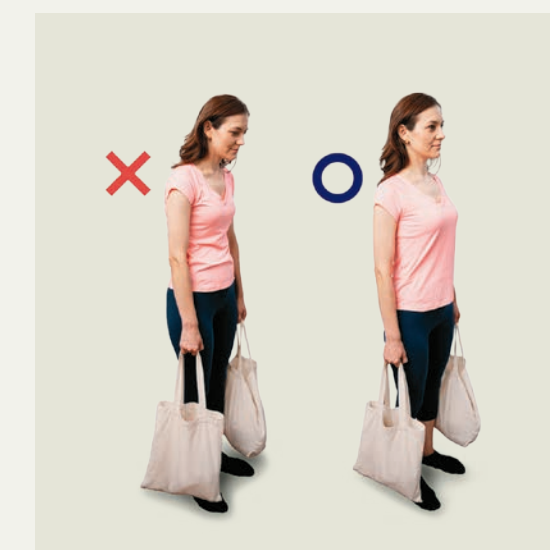
The farmer's carry exercise is a full-body exercise that can work wonders for strengthening, balancing, and coordinating the shoulder muscles. Because it combines stabilizing movements at the shoulder with active walking, all of the shoulder muscles get a great workout. Although it may seem like a simple exercise, it can be quite challenging when adding more weight.

Step 1: While standing, hold a bag loaded with items, a dumbbell, or a kettlebell in each hand.

Step 2: Pull your shoulder blades toward each other and stand as tall as you can. Try to bring your shoulder blades down toward your back pockets while keeping them together.

Step 3: Start walking while holding your posture upright. Be diligent about not slumping over or letting your shoulders drop.

Step 4: Try to do three sets in total, performing for two minutes at first; increase the weight and extend your time as you improve.



3

4 SUITCASE CARRY

The suitcase carry is a variation of the farmer's carry and only requires carrying weight on one side. This exercise is excellent for strengthening both the muscles of the shoulder girdle and the core muscles.

Step 1: In standing, hold a bag loaded with items, a dumbbell, or a kettlebell in one hand.

Step 2: Pull your shoulder blades toward each other and stand as tall as you can. Try to pull your scapulae down toward your back pockets while keeping them together.

Step 3: Start walking while holding an upright posture. Be diligent about not slumping over or letting your shoulders drop.

Step 4: Try to continue this activity for two minutes on each side. Try to do three sets in total; add both weight and time as you improve.



4

5 90-DEGREE CARRY

The 90-degree carry is an excellent exercise for strengthening the muscles of the shoulder and, in particular, the scapula. This exercise can help balance stability and control throughout the shoulder girdle.

Step 1: While standing, hold a can, water bottle, dumbbell, or kettlebell in each hand.

Step 2: Pull your shoulder blades toward each other and stand as tall as you can. Try to pull your shoulder blades down toward your back pockets while keeping them together.

Step 3: Lift the weights up to shoulder height with your upper arms horizontal and your elbows bent to 90 degrees. Start walking while holding an upright posture. Be diligent about not slumping over or letting your arms drop. Keep your hands in line with your arms and avoid letting them bend in either direction.

Step 4: Try to continue this activity for two minutes at first, working up to more as you are able. Try to do three sets in total; increase weight and time as you improve.

"You have to pay careful attention to your form with this exercise, but the rewards are excellent," Ms. Velz said.

It's important to keep the back of your hand in line with your wrist with your fist pointed toward the ceiling. Your forearms must be vertical, without sagging in toward your shoulders.



5

Consult a Professional Focused on Movement

These exercises can be highly effective in helping to reduce or eliminate shoulder pain. However, the shoulder is a complex set of joints, ligaments, and muscles and may require professional analysis and treatment to adequately address a problem.

Ms. Velz suggests seeking a professional focused on movement who can objectively measure your progress. A customized exercise program can help you resolve specific shoulder issues and alleviate pain.

"If you have health or mobility issues that may present problems, consult with your physician before commencing any exercise regimen."

MICROBIOME

New Research Validates Autism's Link to Gut



Continued from Page 1

of microbiome-focused treatment on 18 people with autism who exhibited improvement in both gut and brain symptoms.

"It provides further evidence that the microbiome is altered in autism and that it relates to alterations in biochemistry and that those alterations can affect GI [gastrointestinal] and neurological functioning," James Adams, professor at Arizona State University's Biodesign Center for Health Through Microbiomes, told The Epoch Times. He's been studying the gut-autism link for 20 years and is co-author of the study of 18 people highlighted in the new research.

The Growing Shadow of Autism

No single cause has been found for autism spectrum disorder, which is a heterogeneous condition displaying genetic, physiological, and behavioral patterns. It's usually diagnosed in childhood and now affects 1 in 36 children, up from 1 in 44 just two years ago.

The obstacles to studying autism include difficulty testing children who have severe cases and difficulty observing signs and symptoms in subjects. The fact that it's a neurological condition makes it more difficult to study.

Combined with the vastness of the microbiome, that has made it difficult and controversial to quantify the role gastrointestinal problems play in autism. One goal of the study was to forge consensus on this relationship, Jamie Morton, one of the study's corresponding authors and an independent consultant, told The Epoch Times.

Mr. Morton said researchers were surprised at the connections observed when they applied an algorithm to the data. They put autistic and neurotypical controls side by side to look for such traits as gene expression, immune system response, and diet.

"What was startling was how strong the signal was. After running our analysis, you could just see it pop off from the raw data," Mr. Morton said. "We hadn't seen this kind of clear overlap between gut microbial and human metabolic pathways in autism before."

A "pathway" is a biochemical process of linked reactions whereby one molecule is processed into another, or compounds are changed in a series of processes to deliver a certain substance to a certain place in the body. For example, you may eat a certain vitamin or compound that gets digested into other molecules that get changed into other molecules through cellular processes until they eventually reach your brain as a specific neurotransmitter.

Researchers said the new information paves the way for precise treatment-focused research on manipulation of the microbiome. The ability to use stool analysis to see how patients respond to specific interventions over time can shape future studies and, ultimately, clinical care.

"What's significant about this work is not only the identification of major signatures, but also the computational analysis that identified the need for future studies to include longitudinal, carefully designed measurements and controls to enable robust interpretation," Kelsey Martin, executive vice president of SFARI and the Simons Foundation Neuroscience Collaborations, said in a SFARI statement.

Study Specifics

The meta-analysis compared 600 pairs of children; each pair consisted of a child with autism and a neurotypical control of the same age and sex. Each pair was analyzed and compared using novel computational methodologies so the researchers could identify microbes with differing abundances between the two groups.

There were 95 metabolic pathways differentially expressed in the brains of autistic subjects that had corresponding microbial pathways. "Pathways related to amino acid metabolism, carbohydrate metabolism and lipid metabolism were disproportionately represented among the overlapping pathways," the study reads.

Functionally, those pathways were confirmed with microbial species in the genera of *Prevotella*, *Bifidobacterium*, *Desulfovibrio*, and *Bacteroides*. And they are associated with brain gene expression changes, restrictive dietary patterns, and pro-inflammatory cytokine profiles.

The study's inclusion of the 2019 long-term fecal microbiota transplant study led by Mr. Adams and Rosa Krajmalnik-Brown makes the evidence more robust.

"Another set of eyes looked at this, from a different lens, and they validated our findings," Ms. Krajmalnik-Brown said of the meta-analysis in the statement.

The Adams and Krajmalnik-Brown study was also published in *Nature* and noted lower overall microbial diversity and reduced *Prevotella copri* and *Bifidobacterium* in children with autism.

The original study treated 18 children with a microbial transfer therapy that included two weeks of treatment with the powerful antibiotic vancomycin, a bowel cleanse, one initial high dose and 10 weeks of daily low doses of microbial transfers along with a low-dose stomach-acid suppressant.

Essentially, subjects had their gut microbiome cleared out and received a new one from a transplant of healthy donor stool. The results included an 80-percent reduction in GI symptoms and a slow, steady improvement in autism symptoms. The two-year follow-up of the same cohort showed that children in the severe range of autism had significantly decreased symptoms and that beneficial bacteria remained high.

Validation

The meta-analysis provides large-scale confirmation of a theory that many clinicians and researchers have had for years based on studies and observational evidence.

"They're adding credibility to gut treatment with autistic kids. We've been treating autistic kids for decades on the gut, and we've had a lot of mainstream criticism for it," Dr. Armen Nikogosian, a medical and functional doctor who specializes in autism care, told The Epoch Times. "That being said, we certainly haven't figured it all out, but we knew there was a clear connection between the gut and the brain of the autistic child."

"Having mainstream medicine accept this idea would open more avenues for research and treatment. More information on specific microbes that need to be eliminated or encouraged to grow is a never-ending quest for us."

Morton said those could be topics of future studies, but so far the patterns found in autistic children are mostly indicative of the entire microbial ecosystem being dysbiotic, or out of balance.

"The gut bacteria in autism is very complex, and there has been disagreement between different studies as to which bacteria are different in autism," Mr. Adams said. "I think the answer is it depends on where you live. There are different pathogenic bacteria that are present, and there are beneficial bacteria that are missing."

Still, dysbiosis has been addressed in functional medicine for some time with varying degrees of success among those with autistic traits. It's even something of a hot topic online among parents of autistic children who have attempted to alter microbial landscapes through diet.

Parental Intuition

That was the case for Ginger Taylor, whose son began behaviorally regressing in 2003 at 18 months old. Her research uncovered widespread GI issues common in autistic children. One theory was that gluten and casein were contributing to symptoms such as communication and language issues, arm flapping, and hyperactivity.

With little knowledge about nutrition, she changed her son's diet for a few days so she could gather more information about healthy diets for brain health. Immediately, he began having normal bowel movements and maintaining eye contact. Though controversial, gluten-free and casein-free diets have been embraced by many families that claim it has alleviated symptoms. Ms. Taylor first read about it in a book called "Children with Starving Brains."

"GI problems have been particularly difficult, with terrible pain that's not diagnosed or treated correctly or even acknowledged," Ms. Taylor said. "I hope this study is accepted, and we stop having this argument about whether GI is involved with autism."

Ms. Taylor, who maintains a website full of autism research that includes many studies about the gut-brain axis, is optimistic that perhaps this will be the research that leads to better screenings for children, as well as advancing treatment.

But she's also skeptical, since new studies haven't historically led to deep acceptance of the GI link that could drive systemic changes in how autism is approached. For instance, a meta-analysis in 2014 already made a definitive link between autism and GI symptoms. Published in *Pediatrics*, the review article examined 15 different studies.

Improving Education

The responsibility to identify gut problems tends to fall on families, who might not even be aware of them, to convey to doctors who often lack knowledge on how to proceed.

When trained, specialists can identify GI signs and symptoms if they understand autism, Dr. Arthur Krigsmann, pediatric gastroenterologist specializing in the evaluation and treatment of children with autism, told The Epoch Times.

Autistic children, he said, express pain through screaming, crying, hitting, and breaking things. They don't often use the same universal signs that are often associated with GI disorders.

"You can have a patient with severe abdominal pain, a ruptured appendix, and they won't put their hand on their belly," Dr. Krigsmann said. "Their ability to transmit information, even non-verbally, is affected."

Yet when intestinal tissue from autistic children is biopsied, he said there's a commonality. Cells and molecules are uniquely inflamed—not like other inflammatory bowel diseases, such as Crohn's disease. Autism has unique mitochondrial, metabolic, and neurological components that constitute autoimmunity, he said.

"Autism is a medical disease. It's not a psychiatric disease. The intestine plays a role and is probably the most common comorbidity," Dr. Krigsmann said. "The good news is the autoimmune disease can be treated, just like Crohn's is treatable ... if the doctor is able to make the right diagnosis."

Prescribing Veggies: A Billion-Dollar Lifesaver?

Just as unhealthy ultra-processed foods can cause disease, healthy whole foods can cure it

Continued from Page 1

The simulation found that implementing a produce prescription program for nearly 6.5 million U.S. adults with diabetes and food insecurity could prevent 292,000 cardiovascular events over the next 25 years.

Participants in the simulated social program boosted their daily fruit and vegetable consumption by 0.8 servings on average. This incremental change brought about a modest decline in body mass index.

Participants also recorded lower levels of hemoglobin A1C (HbA1c), a key measure of blood sugar management over an extended period. This drop reflects the potential for better management of blood sugar—a key health marker, especially for people with diabetes.

Co-senior author Dariush Mozaffarian, a renowned cardiologist and professor of nutrition at the Friedman School of Nutrition Science and Policy, praised the potential of produce prescriptions.

"Of the strategies that can improve nutrition and diet-related health outcomes for Americans, evidence continues to build that produce prescriptions are a terrific option," he wrote in a Tufts University article.

But what do these improvements mean in the broader scope of life quality? The researchers quantify these improvements using a metric called "Quality-Adjusted Life-Years" (QALYs), which is a measure of years lived with good health. The study showed a gain of 260,000 QALYs among the 40- to 79-year-olds the program would target.

While the program's roll-out would cost an estimated \$44.3 billion, including patient screening, nutrition education, and administrative costs, the potential savings overshadow the investment at an estimated \$44.4 billion in health care and productivity cost.

Even when evaluated over shorter periods such as 5 and 10 years, the program would cost \$18,100 for each QALY gained. This figure is lower than that of many traditional health care interventions.

Notably, the benefits of the intervention were broadly distributed, with results consistent across the population—regardless of age, race, ethnicity, education level, and insurance status.

"These results suggest that a national produce prescription initiative could benefit all Americans, highlighting the potential of Food is Medicine strategies to alleviate health inequities caused by food and nutrition insecurity and diet-related diseases," first author Lu Wang, a postdoctoral fellow at the Friedman School, reported.

In terms of real-world application, there's the potential for the integration of a national produce prescription program as a covered benefit within Medicare Advantage plans and state Medicaid programs—a shift already in motion to some degree. The study authors suggest that the U.S. Department of Agriculture could also roll out a new initiative akin to the Supplemental Nutrition Assistance Program tailored for Women, Infants, and Children.

High Cost of Chronic Illness in US Despite its standing as a global leader in health care spending, the United States has a population in deteriorating health—with nearly 60 percent



▲ Making produce more accessible will help people avoid unhealthy ultra-processed foods.

having at least one chronic ailment. Diet-related afflictions alone represent nearly a fifth of the country's yearly health care expenditures.

These statistics underline the urgency for a more health-conscious society—something the CDC also acknowledges. As of 2019, only 12.3 percent and 10 percent of adults consume an adequate daily amount of fruits and vegetables, respectively.

The American Diabetes Association, recognizing the pivotal role of diet in managing conditions such as diabetes, also recommends a diet rich in vegetables, fruits, lean proteins, and whole grains.

Studies find that for many low-income Americans, the chief challenge in keeping a nutritious diet is its affordability. Studies further indicate that people prioritize filling calories over nutritional value when faced with financial constraints. Less nutritious ultra-processed foods offer a compelling combination of convenience, taste, and low cost that many Americans find hard to resist.

How Produce Prescriptions Are Revolutionizing Health Care

A recent initiative targeting people with Type 2 diabetes in rural northwestern U.S. health centers demonstrated promising results within a time frame of only four weeks.

The program's effect was most notably seen in the significant drop in participants' HbA1c levels. A striking 76 percent of participants started the program with dangerously high HbA1c levels. By the program's conclusion, this figure had plummeted to just 41 percent.

These findings align with a 2017 study, in which individuals with uncontrolled diabetes similarly experienced a significant reduction in HbA1c levels after only 13 weeks. These concurrent results demonstrate the potential efficacy of produce prescription programs in managing Type 2 diabetes.

Thanks to these successes, produce prescription programs are rapidly gaining momentum, with robust support from public and private entities. The U.S. Department of Agriculture recently invested \$59.4 million in the Gus Schumacher Nutrition Incentive Program (GusNIP). These programs enable health care providers to prescribe fresh fruits and vegetables to patients, injecting a wholesome dose of nutrition into health care.

"Since its creation in 2019, GusNIP projects have increased access to healthy foods, and this investment serves to ensure that even more consumers can provide fresh, locally-grown fruits and vegetables for their families," Dr. Dionne Toombs, acting director of the USDA National Institute of Food and Agriculture, said in a press release.

Private health care players are also bolstering this innovative approach to health. A notable example is Geisinger Health, which has been working to extend its Fresh Food Pharmacy pro-

gram, mainly targeting people with diabetes and those experiencing food insecurity.

Sharing knowledge and best practices is crucial to these programs' efficacy. In this spirit, the National Produce Prescription Collaborative, a network of produce prescription providers, is focused on facilitating knowledge exchange. The aim is to identify how this approach can integrate into existing health care payment models, thereby expanding its reach and potential effects.

Produce prescription programs are also taking root at state levels, with North Carolina, Massachusetts, and California implementing them under various Medicaid waivers.

Moreover, the White House announced a new National Strategy on Hunger, Nutrition, and Health on Sept. 28, 2022. This strategy emphasizes testing produce prescription programs in Medicaid, Medicare, Veterans Affairs, and the Indian Health Service.

Organizations such as Kaiser Permanente, the American Heart Association, the Rockefeller Foundation, the American Academy of Pediatrics, and the American College of Lifestyle Medicine have also committed substantial resources and training efforts, firmly endorsing the "food is medicine" concept.

The success of these initiatives depends on various elements. Recently established guidelines by the Centers for Medicare and Medicaid Services could present considerable challenges.

"Moving forward, states using innovative Medicaid financing will not be able to enroll members in food-as-medicine programs for more than six months, regardless of diagnosis or financial circumstance," Adam Shyevitch, chief program officer at About Fresh, a nonprofit championing produce prescriptions, reported.

Implementing produce prescription projects is no simple feat. Beyond securing funding and staffing, research indicates that patients who benefit from these programs often wrestle with an intricate web of social issues beyond just food insecurity.

Logistical difficulties from transportation and child care to unreliable communication channels with patients can hamper patient engagement, making the delivery of these programs a demanding task.

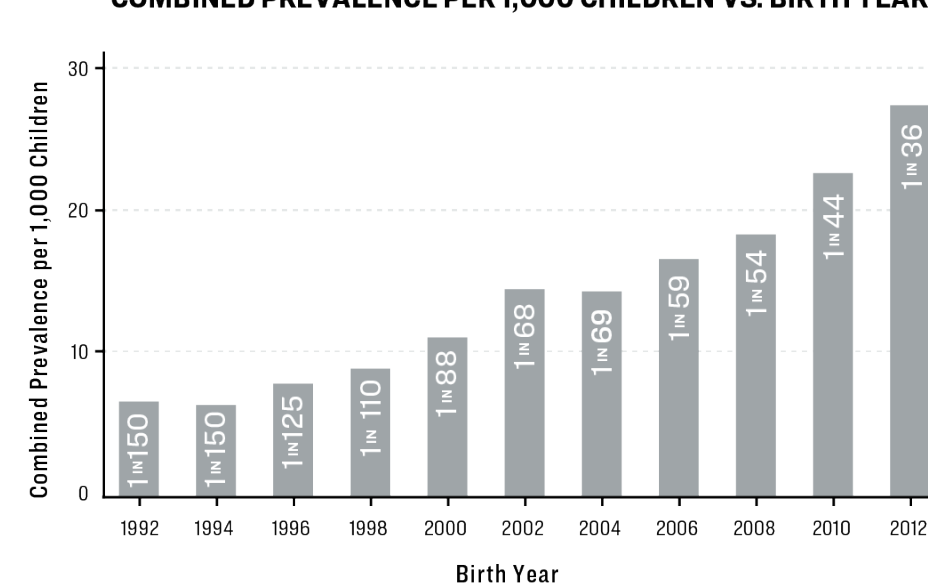
Overcoming these challenges is critical to unlocking the full potential of these initiatives in the fight against chronic diseases.

The potential benefits of the "food as medicine" concept could be transformative for society—potentially marking a profound shift in our approach to health and wellness care.

"These innovative treatments are exciting because they can not only improve health and reduce health care spending, but also reduce disparities by reaching those patients who are most in need," Dr. Mozaffarian said.

Sheramy Tsai, BSN, RN, is a seasoned nurse with a decade-long writing career. An alum of Middlebury College and Johns Hopkins, Tsai combines her writing and nursing expertise to deliver impactful content. Living in Vermont, she balances her professional life with sustainable living and raising three children.

COMBINED PREVALENCE PER 1,000 CHILDREN VS. BIRTH YEAR



SOURCE: NATIONAL CENTER ON BIRTH DEFECTS AND DEVELOPMENTAL DISABILITIES, CENTERS FOR DISEASE CONTROL AND PREVENTION.

▲ Autism rates have risen sharply in recent decades with 1 in 36 children born in 2012 now being diagnosed with the condition.

PREPARING FOR A GOOD END

PART 2 TALKING ABOUT DEATH: THE FIRST STEP TO DYING WELL

Early, honest, and ongoing conversations about life and death are essential for stopping needless suffering at the end of life

➔ *In this series, we'll examine ways of making meaning in the face of death, offering tools founded in traditional wisdom and scientific evidence to help our readers live well right to the very end.*



Previous Parts:
TheEpochTimes.com/Good End

By Sharleen Lucas

"Overtreatment and unresolved existential issues is what causes suffering at the end of life," palliative care expert Rebecca Gagne-Henderson told The Epoch Times.

Up to 90 percent of patients with serious, life-limiting illnesses, such as cancer, COPD, and chronic kidney disease, report never discussing their end-of-life wishes with their physicians. Research shows that patients want these discussions but most never initiate the talk—nor do their doctors, whose training focuses on saving lives, not helping people die well.

What I see a lot of times in hospice is that family members haven't talked.

Lisa Pahl, hospice and emergency room social worker

Aggressive medical treatment is appropriate when a condition is treatable and a patient wishes to continue curative therapies. But for end-of-life patients—young or old—whose condition will no longer improve, it worsens their final days.

The Problem With Avoiding Death
Ms. Gagne-Henderson tells one such story in her blog, *The Palliative Provocateur*. "Sarah" was at least 90 years old. Dementia kept her bed-bound, nonverbal, and fed through a gastric tube in a nursing home. She endured three trips to the emergency room (ER) over three months, twice because of infections and bedsores. Both times, the hospital admitted her to

the intensive care unit (ICU), where they intubated her for several weeks. During her third visit to ER with a broken hip from nurses' simply turning her in bed, the physician realized it was time for a hospice referral.

In a long line of health care providers, Ms. Gagne-Henderson may have been the first to talk to Sarah's husband about what Sarah would want and how this kind of overtreatment increases suffering.

"The frank discussion motivated him to stop the ER trips and let Sarah die naturally."

Ms. Gagne-Henderson contends that early, honest, and ongoing conversations about life and death are essential for preventing both issues.

"Often, rather than doing things for the patient, we are doing things to the patient," she wrote.

The Power of Frank Discussions

Across more than 100 studies, research shows that loved ones and health care providers are more likely to respect a patient's end-of-life wishes when clear talks and end-of-life documents are in place.

These open discussions reduce overtreatment and distressing readmissions to the hospital for patients whose condition won't improve. They also increase hospice admissions and earlier referrals to palliative care services—which studies show helps patients with serious illnesses live better for longer, extending time with loved ones.

In addition, open discussions give voice to deeply personal feelings and hopes often unrecognized until the talks begin. This reflection helps resolve inner turmoil, addressing the existential issues Ms. Gagne-Henderson said profoundly affect whether one dies gracefully.

Open Talks Help Loved Ones Grieve

Having time to process the dying journey is essential for a family to find peace and accept the reality of death.



Up to **90** PERCENT of patients with serious, life-limiting illnesses report never discussing their end-of-life wishes with their physicians.

In multiple studies, loved ones report that early, open talks helped them make the most of their limited time and pursue palliative care services sooner.

In multiple studies, loved ones report that early, open talks helped them make the most of their limited time and pursue palliative care services sooner.

Families also state that talking before a patient becomes too ill is crucial, allowing family members to prepare for their death and maintain realistic hope.

Avoiding the talk increases everyone's anxieties and hinders loved ones' ability to move through the grieving process. It also contributes to false hopes of a cure, robbing patients of time to nurture relationships and complete significant tasks before dying.

Talking Relieves Family of Distressing Decisions

Dodging open talks about death also increases confusion and decision-making stress for loved ones and health care providers, according to Lisa Pahl, a hospice and ER social worker since 2006.

Thinking about death as a normal part of life rather than an unexpected event is the first step toward discussing it.

"Providers and individuals will do more treatment over less because they're afraid of not doing enough," Ms. Pahl told The Epoch Times.

"It usually requires multiple conversations at different times until a loved one has heard the patient's wishes. They need to hear it, and they need to feel confident. Otherwise, everyone's going to say: 'We're not sure. Do it. Do it all.'"

"Doing it all" is appropriate when the benefits of life-saving treatment outweigh the risk, but this depends on the patient—his or her age, health status, stated wishes, and illness or trauma.

Ms. Pahl said it's her life's passion to help people prepare for a smoother death, to define what they want in their final days. This passion led her and her business partner, Lori Locicero, to create a conversation tool called

The Death Deck—a lighthearted set of cards to spur talks about death.

"What I see a lot of times in hospice is that family members haven't talked," she said.

And when families don't talk, they tend to fill in the blanks with what they would prefer without consulting their dying loved one.

Ms. Pahl's experience is confirmed by research. Family members who knew clearly what their dying loved one wanted report less distress during the dying process.

"Conversations breed confidence," she said.

"Your family members will potentially face different moments where they're going to have to make deci-

sions on your behalf, and that is really stressful. Really stressful.

"If you haven't had specific conversations about what decisions they would want you to make in different scenarios, then they cannot make decisions confidently."

Sharleen Lucas, R.N., is a freelance writer with medical, spiritual, and emergency care expertise. After two decades of serving patients and families at the bedside or as a spiritual care director, she's committed to empowering readers' physical and spiritual well-being by boiling down health information with the warmth and skill of an RN next door. You can find her at RNextdoor.com

NEXT WEEK Advanced directives aren't just documents.

VITAMIN ESSENTIALS

The Potent Health Benefits of Vitamin E

ALL PHOTOS BY SHUTTERSTOCK UNLESS OTHERWISE NOTED

This suite of antioxidants supports the immune system, combats cancer, and may protect the brain

By Emma Suttie

Vitamin E's health benefits extend far beyond glowing skin and thick, luxurious hair.

Research has shown that vitamin E is vital for preventing and reversing various disease complications because of its antioxidant and anti-inflammatory abilities as well as its ability to prevent clotting and enhance the immune system.

What we call "vitamin E" is actually a group of eight, fat-soluble molecules that are broken into two groups—tocopherol and tocotrienol. Each can be further divided into alpha, beta, delta, and gamma, making a total of eight vitamin E molecules.

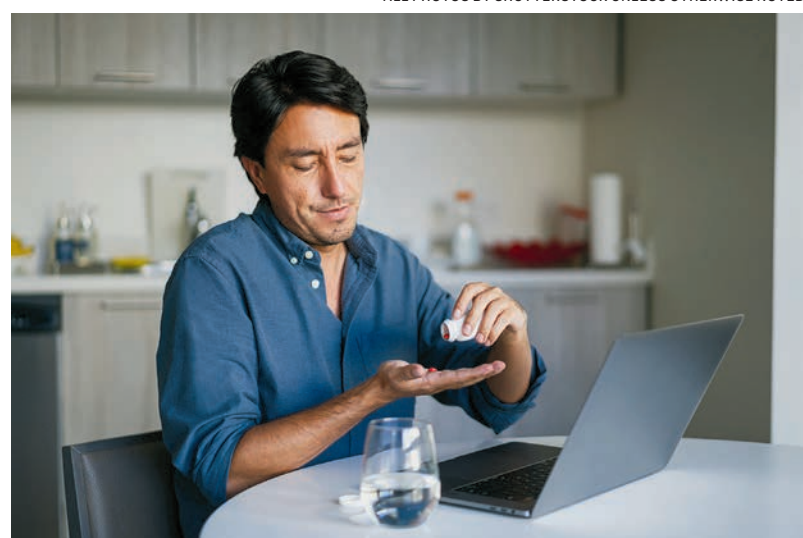
Our bodies need vitamin E to help fight infections, keep our muscles strong, maintain clear vision and beautiful skin, and help combat the effects of aging. Vitamin E has also been shown to protect against cancer and may help to safeguard against neurodegenerative diseases such as Alzheimer's as we age.

Here are some of the ways vitamin E benefits our health.

Fights Free Radicals

All eight molecules of vitamin E are powerful antioxidants, which are needed in the body to balance levels of free radicals.

Free radicals are produced as a natural byproduct of the body's conversion of food into energy, but they are also formed



➔ *If you aren't eating enough whole foods to get your vitamins and minerals, then aim to take the best supplements you can afford.*

ANDRES/GETTY IMAGES

after exposure to X-rays, cigarette smoke, air pollution, and industrial chemicals. If we don't get enough antioxidants and our levels of free radicals get too high, it leads to oxidative stress, which can damage cells and our DNA, and can accelerate aging.

There's accumulating evidence that most of the degenerative diseases that afflict humanity—such as atherosclerosis, cancer, inflammatory joint disease, asthma, diabetes, senile dementia, and degenerative eye disease—are a result of free radical damage.

Vitamin E helps to combat free radicals as well as to decrease inflammation that, when prolonged, leads to a variety of diseases such as cardiovascular disease, the No. 1 cause of death worldwide. According to a report published in the Annual Review of Nutrition, evidence suggests that oxidative stress and inflammation are some of the main factors in the formation of fatty plaques in the arteries that lead to

coronary artery disease. It states: "Vitamin E is a potent antioxidant with anti-inflammatory properties. Several lines of evidence suggest that among different forms of vitamin E, alpha-tocopherol (AT) has potential beneficial effects with regard to cardiovascular disease."

Benefits Immune System

Vitamin E also supports strong immunity, helping the body to fight infections, and is one of the most effective nutrients known to modulate the immune system. A deficiency of vitamin E has been shown to impair immune function, but it can be corrected with supplementation. Although deficiency is rare, getting more than the current dietary recommendations has been shown to enhance the function of the immune system and reduce the risk of infection, especially in older people.

Studies of vitamin E's effects on the immune system have typically focused on

alpha-tocopherol; however, increasing evidence suggests that other forms of vitamin E, including other tocopherols and tocotrienols may also have potent immunomodulatory effects.

Fights Cancer

A study published in *Carcinogenesis* found that a gamma-tocopherol-rich mixture of tocopherols inhibited the formation of tumors in the colon, prostate, mammary (breast), and lungs in animal models. The mixture may have a high potential for applications in the prevention of cancer in humans, according to the authors, who said the vitamin E compounds yielded very promising results for their future use in cancer prevention and warrant extensive future research.

In a study published in *BMC Cancer* in 2015, researchers used vitamin E to target the mitochondria in breast cancer cells. The researchers concluded that the mitochondria-targeted vitamin E efficiently killed breast-tumor-initiating cells, which play a role in initiation, metastasis, therapeutic resistance, and relapse of breast cancer.

Researchers in another study published in *BMC Cancer* found that certain forms of vitamin E—such as gamma-tocopherol, delta-tocopherol, gamma-tocotrienol, and delta-tocotrienol—have far superior cancer-preventive activities than does alpha-tocopherol, which has been studied extensively in relation to cancer. The study report states that these vitamin E forms are much more powerful than alpha-tocopherol in inhibiting multiple cancer-promoting pathways, and concludes that the existing evidence strongly indicates that these lesser-known vitamin E forms are effective agents for cancer prevention or as adjuvants for improving prevention, therapy, and control of cancer.

Vitamin E has also been shown to have a protective effect against certain types of cancer.

In a study published in *Molecular Carcinogenesis* in 2020, researchers found that a lower intake of vitamin E is associated with increased cancer risk and that supplementation with alpha-tocopherol has been shown to be beneficial in reducing cancer risk.

Although there are multiple scientific studies that support vitamin E's role in fighting cancer, not all studies involving vitamin E and cancer have found a beneficial effect, and this seems to be particularly true in the case of prostate cancer.

For example, one study of men who currently smoked or who had smoked but had quit found that they had a reduction in prostate cancer risk when taking 400 international units (IU) of vitamin E daily. In another clinical trial, male smokers who took 111 IU of a synthetic form of vitamin E daily for eight years had a 32 percent lower risk of developing prostate cancer than those who did not take the supplement.

By contrast, a large, randomized clinical trial found that supplementation with 400 IU of synthetic vitamin E daily didn't reduce the risk of prostate cancer in healthy men older than 50. In fact, the men who had taken the vitamin E had a 17 percent higher risk of prostate cancer than the men who had taken the placebo.

This discrepancy could be because there are various types of vitamin E, and some studies use natural sources while others use synthetic forms of the vitamin. Natural and synthetic vitamin E are not equivalent in composition, structure, or bioavailability.

The study a higher risk of prostate cancer among men who had taken vitamin E had used all rac-alpha-tocopheryl

acetate—a synthetic form of vitamin E.

May Benefit the Brain

Some scientific studies have suggested that vitamin E could protect the brain from memory loss and cognitive decline associated with Alzheimer's disease and other forms of dementia—although the results of multiple studies on the subject have been mixed.

A 2021 narrative review found that vitamin E supplementation protected the brain against the effects of mild traumatic brain injury on synaptic plasticity and cognition. It also found that vitamin E decreased the rate of mild cognitive impairment, which is the initial stage in the development of dementia.

Vitamin E has also been shown to have a protective effect against certain types of cancer.

According to the Alzheimer's Association, more than 6 million Americans have Alzheimer's disease, and by 2050, that number is projected to swell to a staggering 13 million. Therefore, it's urgent to find better ways to treat the disease, or preferably, to preserve brain function in an aging population.

One review published in 2019 stated that vitamin E is important for brain health because of its antioxidant, anti-inflammatory, and neuroprotective properties, and that levels of vitamin E in dementia patients are lower than in those without the disease. But, the evidence for vitamin E's ability to treat dementia is still "mixed and inconclusive," it stated. These findings suggest that more research is needed to understand the relationship between vitamin E and disorders of the brain.

4 STEPS TO STARTING THE CONVERSATION

If you are facing your final days, or know someone who is, these steps can help you navigate a conversation about final wishes and important concerns.

1. Think About What Matters to You
Thinking about death as a normal part of life rather than an unexpected event is the first step toward discussing it.

"The first thing you need to do is determine what you're afraid of. And that's not just about the dying process. It's about what's going to happen to my loved ones. Who's going to take care of my house for my wife? These kinds of things can cause a lot of existential suffering," Ms. Gagne-Henderson said.

2. Just Do It

Starting the conversation is the hardest part.

As Ms. Pahl said: "People always have things to say on the topic. It's just getting them going."

Unsurprisingly, 90 percent of people say talking with family about end-of-life care is important, but only 27 percent start the conversation.

3. Talk Sooner Than Later

Start talking while you're healthy enough to do so. A review of cancer patients found that 79 percent were capable of discussing their end-of-life wishes when first admitted to the hospital. However, 40 percent lost that capacity before the talks began, leaving them in the hands of surrogate decision-makers—someone given medical power of attorney—who were significantly more likely to agree to aggressive treatment, contrary to what most of the patients wanted.

4. Use the Tools

Many helpful tools exist. Various card sets are available online, created by different palliative care experts, with studies validating their usefulness.

Starting your end-of-life paperwork and sharing it with your health care providers and loved ones is another valuable way to get talking. There are many free online tools that are easy to find and explain how to document detailed notes and instructions.

In the end, The Conversation Project, one such tool, offers solid advice: "Think about what matters to you. Plan your talk. Start talking. Keep talking."



Abalone is a large mollusk and a healthy animal source of vitamin E.



Avocados, spinach, beans, and asparagus are good plant sources of vitamin E.



Nuts and seeds are convenient and tasty sources of vitamin E you can eat by the handful.

VITAMIN E

Plant Sources

• Wheat germ oil (Note: Consuming refined wheat depletes the body of vitamin E.)

• Sunflower seeds

• Almonds

• Hazelnuts

• Mango

• Mamey Sapote

• Avocado

• Butternut squash

• Broccoli

• Spinach

• Kiwi

• Tomato

• Pine nuts

• Peanuts and peanut butter

• Red bell pepper

• Turnip greens, beet greens

• Asparagus

• Swiss chard

Animal Sources

• Abalone

• Goose meat

• Atlantic salmon

• Rainbow trout

Individuals with low or normal BMIs are often given a 'pass' and assumed to be healthy.

Dr. Tracy Richmond, assistant professor of pediatrics, Harvard Medical School



BMI readings are most effective for people without a lot of muscle or bone density.

ASSESSING HEALTH

BMI 'Is Not a Measurement of Health,' Say Experts

This outdated way of categorizing body types could be replaced with an even simpler system

BMI cannot measure body composition.



POGONICI/SHUTTERSTOCK

By Vance Voetberg

As the debate surrounding body composition measurements intensifies, health care professionals and researchers question the reliability of body mass index (BMI) as an indicator of health. While BMI has been widely used for more than a century, critics argue that it fails to consider variations in body composition, leading to potential misinterpretations.

As alternatives such as the waist-to-height ratio (WtHR) gain traction, experts discuss the need for a comprehensive approach incorporating multiple health markers for a more accurate assessment of overall well-being.

BMI's Biggest Shortcomings

The BMI assessment was initially developed to evaluate the health of large populations, offering a broad perspective on the overall fitness of society. In this context, the BMI assessment gen-

BMI is measured by dividing a person's weight by the square of his or her height.

erally provides accurate results. However, when applied to individuals, as is now standard practice, it falls short of providing a comprehensive picture of a person's health status.

BMI is measured by dividing a person's weight by the square of his or her height. The final number is categorized as underweight, normal, overweight, obese, or severely obese.

The conventional understanding defines the "normal" range as indicative of metabolic health, representing a bal-

ance between too skinny and too fat. While this reasoning seems logical, it overlooks significant differences in body composition.

Because BMI is based solely on height and weight, it ignores muscle mass, bone density, overall body composition, and racial and sex differences.

"For example, a bodybuilder may have a very high BMI but be very lean because their muscle is increasing their weight, which increases their BMI," said Chris Masterjohn, who has a doctorate in nutritional science. Therefore, BMI "is not a measurement of health at all—it is a measurement of your weight and height."

Research shows that higher muscle mass serves as a crucial indicator of improved health and longevity, positively correlating with an increased lifespan. On the other hand, excess fat is strongly associated with a significant reduction in life expectancy.

"Individuals with higher BMIs can be healthy," said Dr. Tracy Richmond, an assistant professor of pediatrics at Har-

vard Medical School with more than 10 years of experience conducting weight-related research.

She said using BMI alone to determine health risks can lead to overlooking individuals who may require further assessment, potentially misleading healthy individuals into believing they're overweight and misinforming others who may face serious health challenges.

"Individuals with low or normal BMIs are often given a 'pass' and assumed to be healthy," Dr. Richmond said. But people with "normal" BMI scores may have disordered eating and be at risk of anemia and micronutrient deficiencies.

What Is a Better Way to Assess Fitness?

Margaret Ashwell, a British-based public health researcher and a consultant in nutrition science specializing in obesity and shape, said WtHR offers a valuable alternative to the BMI assessment in analyzing body composition and health. WtHR compares waist circumference to height; ideally, waist circumference is less than half of height.

"WtHR is a better indicator of early health risk than BMI because it is a proxy for central adiposity," Ms. Ashwell told The Epoch Times. "Fat stored in central depots is a risk factor for major metabolic diseases, such as Type 2 diabetes and heart disease."

This simple method, according to Ms. Ashwell, accurately identifies the problem doctors should be looking for: the accumulation of fat. And given that increased exercise and muscle are associated with a smaller waist circumference, the WtHR assessment can distinguish between fat and muscle, unlike BMI.

A 2021 study found that the WtHR measurement more reliably predicted hypertension among Type 2 diabetics than BMI assessment.

Another study demonstrated that the WtHR ratio outperformed BMI circumference as a screening criterion for metabolic syndrome.

"The simple message of 'keep your waist to less than half your height' can be applied to men and women and children of all ages in all ethnic groups," Ms. Ashwell said.

The Best Ways to Measure Health

While the WtHR test may offer advantages over BMI, it alone doesn't entirely assess an individual's health; it can't, for instance, reveal elevated inflammation or a nutrient deficiency.

Therefore, Mr. Masterjohn suggested additional evaluations such as body fat analysis, fasting glucose measurement, lipid profile testing, inflammation markers such as C-reactive protein, and a complete metabolic panel, blood count, and urinalysis to obtain a comprehensive understanding of one's health.

He also recommended a functional movement screen by a physical therapist or personal trainer to preserve optimal body functionality with age.

put strength and effort into studying mental illness and how it impacts lives," Dr. Kessing said. People with mental disorders are often misjudged by their families and coworkers, and there is even self-stigmatization, he added.

Dr. Kessing emphasized the significant role of loneliness in perpetuating the challenges faced by people living with mental illness.

For some, dealing with mental disorders means living in isolation, lacking support and understanding from family and society. A 2017 study published in the European Archives of Psychiatry and Clinical Neuroscience revealed that self-stigmatization can be a barrier to recovery for patients with mental illness. Feelings of shame and guilt can burden mentally ill individuals, hindering them from seeking the help they need.

People affected by mental disorders can find comfort in knowing there is no shame in their condition and that many others have also faced challenges at some point in their lives, Dr. Kessing said.

The Future of Mental Health Is Within Reach

The Danish study has unveiled avenues for future research, according to Dr. Kessing. Longitudinal studies can provide insight into the lifelong journeys of people with mental health disorders. And research

on psychotropic medications and other treatments, such as metabolic interventions, offer directions for treatment.

"[Mental illness] is more common than we thought. People don't have to live in fear. They aren't alone," Dr. Kessing said.

Michelle Standlee, R.N., is a health reporter for The Epoch Times. She has a background as a registered nurse and medical writer, covering topics including mental and behavioral health, women's and children's health, traditional health care, complementary medicine, and alternative medicine.

People dealing with mental disorders can often end up isolated without the support and understanding they need.



JUPITERIMAGES/GETTY IMAGES

As Einstein advised, significant challenges require a shift in our thinking.



ARIYANTODEN/SHUTTERSTOCK

INTENTIONAL LIVING

Change Your Thinking, Change Your Life

To elevate beyond the problems we've created, we need to transform our thinking

By Joshua Becker

Recently, I came across a quote from Albert Einstein that struck a chord with me:

"The significant problems we have cannot be solved at the same level of thinking with which we created them."

I don't know the exact context within which he offered this quote, but the simple wisdom stopped me in my tracks. Literally. I was running at the time.

There is both truth and opportunity to be found in this important idea.

Consider, as just one example, the clutter in our homes. If we find ourselves overwhelmed by our possessions or struggling to make a change owning less, at some point we need to evaluate the thinking that initially resulted in a home with too much clutter. It didn't just happen by accident.

Whether we purchase too much, keep too much, have habits to change, or struggle to let go for some reason, somewhere along the way, our current thinking resulted in a home with too much clutter.

And if we ever want to fully solve the problem, we'll need to change our thinking about the possessions we keep.

So if that's you, and you read my articles specifically looking for inspiration to own less, let me challenge you today: Something in your thought process about possessions needs to change if you are ever going to solve the clutter problem in your home. No doubt there are countless articles on this website designed to help you make that change.

But the full opportunity of Einstein's quote extends beyond decluttering. It resonates in every area of our lives: relationships, career paths, personal growth, health, and so much more. If we ever want to overcome the significant challenges we face in life, we'll need to embrace a shift in our thinking—especially if we tried to change before.

Consider relationships. If you're finding communication difficult or feeling disconnected from others, rehashing the same old methods and habits and attitudes won't help. To bring about a change, such as a healthier relationship with your spouse, you might need brand-new thinking altogether. Maybe a shift in perspective toward empathy, understanding, patience, or unconditional love.

Consider your health. If you're trying to lose weight or get in shape or change your habits, the old thinking that brought you to your current health situation must change. The solution lies in thinking anew about how you perceive food, fitness, and overall wellness.

Consider your career. If you're feeling stuck or dissatisfied, you'll keep doing the same thing over and over unless you change your perspective. Maybe it's time to think about work differently, or how to advance in your career, or maybe even redefine what success means to you.

Even in fighting addictions such as smoking, this solution isn't just about quitting the habit—it's about

changing your perception of stress management, social bonding, or even personal strength.

The list could continue. Even as a society, if we've tried the same solutions to problems over and over again with little or no positive result, it's time to change the way we think about solving the issue.

"The significant problems we have cannot be solved at the same level of thinking with which we created them."

We must learn to think differently.

Changing our thinking is, of course, easier said than done. And the older we get, the more difficult it becomes. It is a process that requires constant commitment. But it's worth it.

If we want to end up in a different place tomorrow, we must change the thinking that resulted in our place today.

The process begins with questioning our deep-rooted beliefs, stepping out of our comfort zones, and opening ourselves to the possibility of a new viewpoint. What is a change that you are struggling to bring about in your life? Once you've identified it, think through these steps:

1. Acknowledge the Need for Change

Recognize that the status quo isn't serving you well.

Accepting this can be challenging, but it's the first step toward significant change.

If you're feeling stuck or dissatisfied, you'll keep doing the same thing over and over unless you change your perspective.

2. Question Your Beliefs

It's natural to hold onto beliefs, even those that might be detrimental.

Try to identify your assumptions first and then challenge them, opening space for fresh perspectives.

3. Develop a Growth Mindset

Embrace the concept of continuous learning and personal growth.

Believe that you can change and improve with consistent effort. Your predisposition doesn't have to be your future.

4. Learn from Varied Perspectives

Immerse yourself in the thoughts of those who see the world differently. Especially those who seem to have found success in the change you are trying to make. Read books, find a mentor, listen to podcasts—these can offer fresh insights that stimulate new thinking and growth.

These are not overnight solutions but important steps on a journey toward personal development.

Transformation lies in our capacity to change our thoughts. After all, it's our thoughts that drive our actions and craft our reality.

But there is amazing opportunity in this truth.

Problems that seemed insurmountable suddenly become solvable when we approach them with a new perspective. In many ways, the capacity to see things differently is our greatest tool for change.

Remember, a revolution starts with a single thought.

Joshua Becker is an author, public speaker and the founder and editor of Becoming Minimalist where he inspires others to live more by owning less. Visit BecomingMinimalist.com

MENTAL WELLNESS

Denmark High in Happiness—and Mental Illness

Study reveals that 70 percent of people in the world's 2nd happiest country have been prescribed psychotropic drugs

By Michelle Standlee

Does happiness in the second-happiest country in the world come with a twist?

Possibly, according to a new study showing that Denmark—whose population has ranked among the happiest in the world for a decade—has a surprisingly high rate of mental health disorders.

A Study Like No Other

"This has never been investigated before [in Denmark]," Dr. Lars Vedel Kessing, professor of psychiatry at the University of Copenhagen, Denmark, and co-author of the study, told The Epoch Times.

The study was recently published in JAMA Psychiatry, a peer-reviewed medical journal by the Journal of the American Medical Association. Examining a random sample of 1.5 million Danish residents from 1995 to 2018, the study estimates that, at some point in their lives, a staggering 82.6 percent of the population was treated for a mental health disorder within

hospital settings or by general practitioners or private psychiatrists. This percentage is significantly higher than previously reported, highlighting the greater prevalence and effects of mental health disorders on society.

"Here in Denmark, we've received nominations for being the happiest country," Dr. Kessing said. "We have a sophisticated health care system and many resources. The incidence of mental illness is higher than we originally believed. This study shows that mental illness is not for the few but for the majority."

The study examined mental health disorders experienced by the participants, including anxiety, depression, bipolar disorder, and schizophrenia. This categorization allowed for a nuanced understanding of Denmark's broad mental health landscape.

The research also focused on psychotropic drug prescriptions as a treatment approach and found that 70.4 percent of the population was prescribed psycho-

tropic medication to treat mental health disorders.

These findings shed light on the potential societal burden of mental health disorders and emphasize the role of pharmacotherapy in managing these conditions.

The authors acknowledged the need for further exploration of the clinical effectiveness and safety of the prescribed psychotropic drugs, which fell outside the scope of this study.

Link Between Mental Health Disorders and Socioeconomic Outcomes

The Danish study explored how mental health disorders might affect socioeconomic outcomes by analyzing integrated health and socioeconomic data on national employment, income, and education.

The results showed that people with diagnosed mental health disorders experienced higher unemployment rates, lower income, and a higher likelihood of living alone.

Anxiety, depression, and mood disorders can make stable employment challenging because of trouble concentrating, meeting deadlines, or managing stress effectively.

Stress and burnout can trigger mental health issues in any country, whether ranked among the happiest or not, Dr. Kes-

sing said. People with mental illness often struggle to obtain and keep jobs, which frequently causes more stress, fueling a self-perpetuating cycle.

Mental illness poses significant challenges for people aspiring to pursue higher education. Students dealing with mental health disorders face an increased risk of poor academic performance because of frequent absences and lower school completion rates, according to a 2019 study published in the Australian Journal of Psychology.

The many obstacles associated with mental illness and education can act as barriers, hindering people from reaching their full educational potential and leading to long-term repercussions for their future careers and socioeconomic prospects.

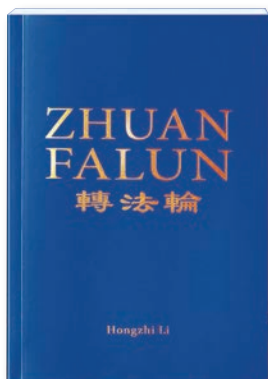
Why Reducing Stigma Around Mental Health Is Crucial

The Danish study's findings have far-reaching implications for health care professionals, policymakers, and society. It is a reminder to prioritize mental health services, reduce the stigma surrounding them, and foster a supportive environment for those struggling, according to the authors.

"This data should encourage society to



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Arthur Waldron
LAUDER PROFESSOR, UNIVERSITY OF PENNSYLVANIA

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The Annual return of the Frank and Evelyn Mandel Family Foundation for the year ended December 31, 2022 is available at its principal office at 290 West End Avenue, New York, NY 10023, phone number 917-733-6600, for inspection during regular business hours by any citizen who requests it within 180 days hereof. The Foundation’s principal manager is Frank Mandel



Research suggests polysaccharides can ease pathogenic processes linked to Alzheimer’s disease.

Could a Carbohydrate Cure Alzheimer’s?

Common polysaccharides are igniting interest as a possible nutrient treatment for Alzheimer’s disease

By Dwight Chapin

What if something as simple as aloe vera could hold the key to treating Alzheimer’s—a devastating disease that currently has no cure and is the sixth leading cause of death in the United States?

John Lewis, an associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Miami Miller School of Medicine has spent his career studying the effects of nutrition on the brain and immune system. In one fascinating study, he found that polysaccharides from aloe vera had a remarkable effect on Alzheimer’s patients.

Mr. Lewis reported that some research subjects were able to regain speech or

the ability to walk after participating in the study. Others regained memory that had long seemed lost.

So, how did this happen? How could a polysaccharide complex from a common plant deliver such profound results?

“We did not treat, cure, manage, or mitigate disease, but we showed the ability of the body to repair and regenerate itself when given the proper raw materials to do so,” he said.

The Alzheimer’s Study
Mr. Lewis and his colleagues conducted a series of studies investigating various polysaccharides—namely those from aloe vera and a hydrolyzed rice bran—to evaluate their effects on the immune system and cognition.

The study, a clinical trial, was published in the Journal of Alzheimer’s

We did not treat, cure, manage, or mitigate disease, but we showed the ability of the body to repair and regenerate itself when given the proper raw materials to do so.

John Lewis, associate professor, Department of Psychiatry and Behavioral Sciences, University of Miami Miller School of Medicine

Disease in 2013.

The study involved 34 patients who were just under 80 years of age on average. Each had been diagnosed with Alzheimer’s for at least one year but had the disease for an average of three years, and their condition was characterized as moderate to severe. Most study participants also had varying comorbidities.

After being enrolled in the study, participants had their blood drawn to assess their immune function and evaluate markers of inflammation. The researchers wanted to study the immune system to see whether they could demonstrate that changes in the way it functioned were related to changes in cognition.

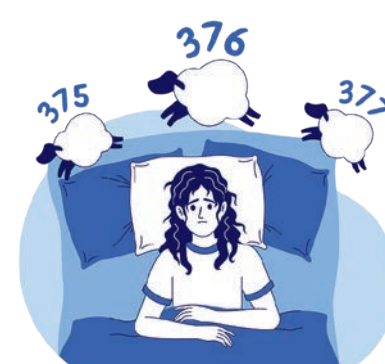
One of the immune system’s most basic tools is inflammation. Inflammation is a bit like a firestorm the immune system deploys to the site of an injury or infection to combat pathogens, such as bacteria that get in through a wound or viruses that get in through food. As important as inflammation is, this firestorm is routinely over-triggered and contributes to countless diseases. It ends up burning healthy tissues and systems.

Markers of inflammation were an important aspect of the study because cognitive dysfunction, like many other chronic diseases, is marked by higher levels of inflammation.

Continued on Page 18

Harness the Healing Force of Sleep

Poor sleep can impair memory, daily productivity, immune function, and mood regulation.



THE IMG/SHUTTERSTOCK

Do what you can to get the most from this daily reboot for brain and body

By Dr. Dwight Chapin

Sleep is a dynamic, complex process that affects every tissue, organ, and biological system in our bodies. When we sleep, we tap into our healing potential and support cellular repair.

When we neglect sleep, and fail to prioritize our need for this daily reset, it puts us on a fast track to burnout and chronic disease.

Sleep is among the most critical factors for peak performance, memory, productivity, immune function, and mood regulation, research has shown. What happens when our body is at rest is spectacular.

Critical Functions of Sleep

Sleep plays several important roles that are essential to our health and daily function.

Declutters the Mind
Sleep is vital to several brain functions, including how nerve cells communicate and how the brain manages waste by removing memory-impairing proteins.

Triggers Our Biochemistry
Sleep activates neurotransmitters and hormonal switches that prime the body for rest and repair.

Relaxes Our Nervous System
Sleep helps our nervous system to de-stress. During sleep, our sympathetic nervous system—which controls our fight-or-flight stress response—can

drop its guard and reset while the parasympathetic nervous system takes over to promote relaxation and digestion.

Keeps Cortisol in Check
Sleep regulates our cortisol levels. Cortisol is a steroid hormone produced by the adrenal glands that affects many systems in the body and helps manage blood pressure, blood sugar, and the body’s response to stress, inflammation, and metabolic health.

Supports Immunity
Sleep gives us an immune boost. During sleep, inflammation-fighting, immune-system-priming proteins are released. These drive cellular repair and our body’s recovery processes.

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Getting Fit With an Electric-Assist Bike

E-bikes offer an excellent way to push your body just the right amount to stay in shape

By Gabe Mirkin

Electric bikes, or e-bikes, have become increasingly common, offering many people who wouldn't otherwise ride a bicycle a way to get outside and get moving.

Anyone who has difficulty accelerating a bike will benefit from an added boost from an electric motor. Electric bikes with torque sensors even sense how much pressure you are pushing the pedals with and adjust accordingly, providing a very natural pedaling experience.

Other types of e-bikes engage the motor as soon as you pedal at any pressure, and still others will allow you to twist a throttle and cruise along without pedaling at all.

Consider an electric bike if you have:

- Weak muscles
- Any condition that requires you to limit your exercise, such as irregular heartbeat
- Lack of conditioning for any reason
- Fear that you won't be able to keep up with other riders

Electric bikes can improve training programs for cyclists at all levels. They can usually be adapted for people with special needs or disabilities and can make it possible for people who haven't ridden in years to get all of the benefits of cycling.

Our Tandem Trike

My wife, Diana, and I have been passionate tandem bicycle riders for 28 years. I am 84, and Diana is 77. We live in The Villages in Florida, the largest retirement community in the world, and we ride more than 150 miles a week.

Five years ago, in March 2014, we rode into a pile of sand while going about 20 miles an hour and crashed. I wasn't hurt, but Diana broke her hip, pelvis, shoulder, and five vertebrae, and surgeons had to install a significant amount of hardware in her body to put her back together. She has osteoporosis and rheumatoid arthritis, which means that another crash would probably have even more serious consequences.

We certainly weren't going to give up riding bicycles, so our friend Larry Black, of Mount Airy Bicycles in Maryland, sold us a recumbent tandem tricycle. It's much safer than a regular upright two-wheeled tandem, since it has three wheels (two in front, one in the back),



▲ Electric bicycles let you pedal at an optimal cadence for ideal exercise.

and is much lower to the ground. However, we immediately learned that the tandem tricycle went at least four miles per hour slower than our upright tandem with the same effort because:

- It weighs 83 pounds, compared with our 26-pound upright bike.
- Friction from its long front timing chain and long derailleur chain cause a tremendous loss of energy.
- Smaller 20-inch wheels, compared with the upright's 27-inch wheels, have greater resistance.
- We can't stand up, so we get no help from gravity when going up hills or accelerating after a stop.

We Got Left in the Dust

We couldn't keep up with our group of tandem riders who average 17-20 miles per hour and go much faster than that when they start to sprint. So we spent the first four months riding alone and hating it. On every hill climb and on every stop, we couldn't increase our speed fast enough, and the other couples would pull away from us. We needed extra help whenever we had to accelerate.

Even if we were willing to ride alone, we still had a problem. We are serious bicycle riders and understand training. We know that exercise prolongs lives and helps to prevent many diseases and that the more intensely you exercise, the greater the benefits. We know that an intense workout requires us to become short of breath

and burn our leg muscles. The tandem trike offered so much resistance to our pedaling that our legs would burn, but we couldn't spin the pedals fast enough to become short of breath. You need to train at your "lactate threshold" to be able to compete and gain maximum health benefits. You can't really become short of breath on a bicycle unless you spin your pedals at a fast pace.

Bicycle racers know that to go fast, they have to spin the pedals at a fast cadence. Most knowledgeable bicycle riders try to spin their pedals at a cadence of more than 70 revolutions per minute, and most racers try to keep their cadence above 90 revolutions per minute. I tried lowering the gear ratio, to reduce the resistance of the pedals so we could keep up our cadence, but that caused us to have such low pedal resistance that we would spin the pedals so fast that the bike would travel even slower and prevent us from getting a decent workout. On hills, we would drop our gears as low as we could to raise our cadence over 70, and we would slow down to 4-5 miles per hour, which was incredibly painful to our minds as well as our bodies.

Electric Motor to the Rescue

Larry Black got us an electric motor from Falco Motors. They make motors that fit onto the hub of the wheel and can be put into any size of bicycle wheel. This motor has solved

our problems, and we are delighted with it. Now, we can:

- Keep up with our group.
- Get great workouts because we are the primary driving force on the pedals.
- Stop or slow down safely and know we will be able to catch up.
- Go on 70-mile rides (carrying two batteries).

Diana rides in the front (captain's seat) and controls the steering and brakes, while I sit in the rear (stoker's seat) and control the shifting and the motor. On a tandem trike, the strongest person should sit in the back seat because the back pedals connect directly to the drive chain. The rider in front loses a lot of power from the very long timing chain that runs from the front pedals back to the rear pedals. I turn the motor on by twisting the throttle on my handlebar. We use the motor assist only when we have to accelerate when we start after stopping, climb hills, or need to catch up to other riders.

We start off with a short push from the motor. Then, I adjust the gears to achieve a cadence of about 90 pedal rotations per minute. I do all our gearing by following the resistance on the pedals. If the resistance increases, I immediately lower the gear and do not wait for the cadence to slow down. I try to keep the pedal cadence at about 90 by adjusting the gears to the resistance of the pedals. When we start to spin much over 100 pedal rotations per minute, I increase the gear resistance.

When the pressure on the pedals increases significantly and I realize that a change in gearing won't keep up the 90 cadence, I turn on the motor and it makes the wheel spin faster so the cadence doesn't slow down.



An electric bike can make hilly routes and longer journeys accessible for anyone.



▲ Electric bikes allow people of all abilities to enjoy the benefits of cycling.

How the Motor Gives Us a Better Workout

By not having to slow down when the pressure on the pedals increases, we are able to keep a fairly constant 90 cadence. This puts us at our "lactate threshold," the ideal training level. When we are barely getting enough oxygen to meet our energy needs, we are exercising at the maximum capacity that we can maintain and still not have to slow down or stop. If we didn't have a motor, our pedals would slow down so much that we wouldn't gain the maximum training effect.

The Need for Interval Training

We ride with our group of PANTHERS Tandem Club members three days each week. On the other days, I ride my upright single bike without a motor, and Diana rides on her single trike.

To gain maximum ability to take in and use oxygen, you need to go into severe oxygen debt and gasp for breath. However, when this happens, you have to slow down and recover. Competitive athletes do intervals in which they pedal, run, skate, or swim a certain distance at near maximum effort, and gasp for breath. Then, they slow down until they recover their breath and again repeat the maximum effort that drives them into severe oxygen debt. Two or three days a week, I do the following interval workout on my single bike:

- 5-10 minute warm-up of slow riding followed by a gradual increase in speed.
- Hard interval of 25 pedal rotations (about 30 seconds), fast enough to leave me short of breath.
- Slow pedaling until I recover my breath, usu-

ally about the same distance as my fast interval.

- Repeats of hard intervals followed by complete recovery of my breath until my legs start to feel heavy or hurt.
- 5-10 minutes of slow miles to cool down.

In my interval workouts, I usually finish between 20 and 30 hard 25-pedal-rotation intervals.

My Recommendations

Electric bikes are now widely available in all styles and price ranges, and your local bike store can probably retrofit your existing bike with a motor.

I think that the key to using an electric motor for a fitness program is to use it only as much as you need it to maintain a cadence of 70-90 rpm. You can use the motor to help accelerate after slowing down or stopping, go up steep hills, and catch up if you get left behind by other riders.

You should be using your own muscles to move your bike, and just get that extra help from the motor. If you have a pedal-assist type of bike, use it at a setting that challenges your muscles and helps you when you need it. You can do intervals (described above) on an e-bike, but you will need to experiment with the settings and timing to get the most out of your workout.

If you haven't yet ridden on an e-bike, go to your local bike shop and try one out. I predict that you will love it.

Caution: Intense exercise can cause heart attacks in people who have blocked arteries leading to their hearts, irregular heartbeats, or other abnormalities. Heart attacks during exercise are more likely to occur when a person starts a new exercise program or increases the speed or duration of exercise. Check with your doctor if you have any concerns.

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Breast Cancer Treatments May Accelerate Aging: Study

Study finds that radiation treatment has the greatest effect on cellular aging

By George Citroner

Breast cancer treatment might be speeding up the aging clock. And radiation therapy may be the culprit, according to a new study from researchers at the National Institutes of Health (NIH).

Understanding this connection is vital, as it sheds light on potential implications for patients' long-term health and treatment decisions.

How Cancer Therapies May Speed Up Biological Aging

Chronological age is simply how long one has been alive, while biological age is one's physiological age. Biological age explains how two 50-year-old men can have dramatically different health; some people age more slowly. Cellular damage—caused by lifestyle, poor nutrition, diseases, and treatments—accelerates biological aging.

Researchers analyzed blood samples from 417 women—with samples collected twice, about eight years apart—in order to measure biological age. Roughly 50 percent of the participants developed breast cancer during that period.

The NIH scientists examined DNA methylation changes, which are chemical modifications to the DNA, in order to determine the risk for age-related diseases.

Cancer diagnosis has been associated with accelerated aging in older survivors.

Accelerated biological aging from cancer treatments may have lifelong health effects.

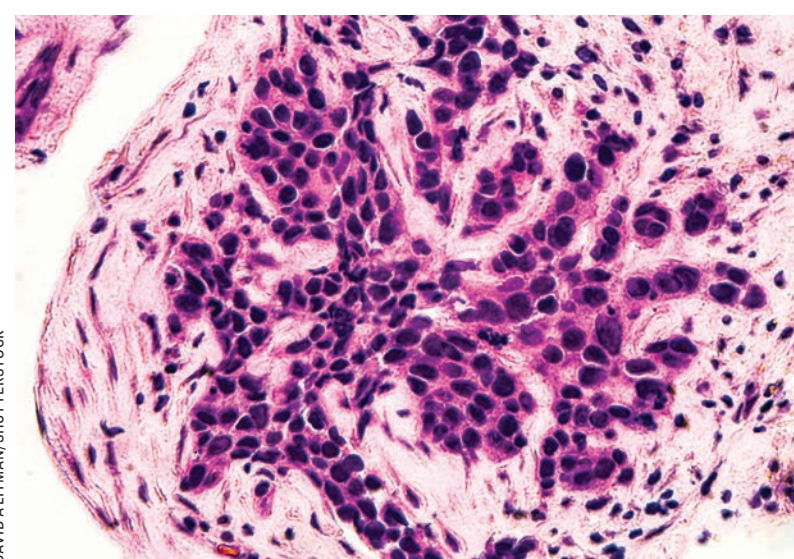
The new study examined how specific treatment regimens—including surgery, chemotherapy, radiation therapy, and endocrine therapy—influenced biological aging.

The results suggest that cancer therapy treatments speed up aging more than surgery does, as methylation changes weren't observed in cancer survivors who had undergone a surgical procedure.

For participants with breast cancer, aging rates differed depending on treatment type. However, faster biological aging was most pronounced in those who received radiation therapy.

"The increases can be detected years after treatment," Dr. Jack Taylor, a scientist emeritus at the National Institute of

Some experts believe the benefits of radiation for breast cancer still outweigh the risks of premature aging.



DAVID ALUTMAN/SHUTTERSTOCK

Environmental Health Sciences (NIEHS) and the study's senior author, said in a statement.

Additional research indicates that accelerated biological aging from cancer treatments may have lifelong health effects.

A 2022 study found that age increases cancer risk and that treatments such as chemotherapy, immunotherapy, surgery, and radiation accelerate biological aging. It also found that by age 45, childhood cancer survivors faced twice the disease burden of people without cancer, indicating that the stresses of other treatments may have similar effects.

"Women faced with a breast cancer diagnosis should discuss all possible treatment options with their doctors to determine the best course of treatment for them," Katie O'Brien, an NIEHS Epidemiology Branch scientist and a co-author of the NIH paper, said in a statement.

Radiation's Effectiveness Still Outweighs Aging Link: Expert

The NIH researchers said the findings

don't mean that women with breast cancer should dismiss radiation therapy as an option. Radiation remains highly effective in preventing recurrence and spreading, according to experts.

Radiation and chemotherapy are important cancer treatments despite their association with increased biological aging. Dr. Theodore Strange, a primary care physician and the chair of medicine at Staten Island University Hospital, told The Epoch Times.

"If not for the treatments, one may not be able to get to be as chronologically older as possible as the cancer would cause ... premature death," he said.

The risks always have to be weighed against the benefits in all treatment plans offered to patients, Dr. Strange said, noting that emerging targeted therapies may limit side effects such as accelerated aging.

Targeted cancer drugs—which are designed to precisely home in on specific proteins that enable the growth and spread of tumors—may not have the same age-accelerating effects.

Whole-Food Diet Reverses Type 2 Diabetes: Study

New study finds plant-centric eating can help reverse insulin resistance without calorie restriction or fasting

By Ayla Roberts

A healthy, balanced diet that includes small portions of meat, fish, or poultry has been a common recommendation for diabetes management for decades. However, new research suggests that implementing a whole-food, plant-predominant diet can put some individuals' Type 2 diabetes into remission.

Study Findings Explained

The study, published in the American Journal of Lifestyle Medicine, set out to determine whether it was feasible to reduce the need for medication and/or prompt remission in patients with Type 2 diabetes without drastic calorie restriction.

Fifty-nine participants, all of whom were Type 2 diabetics, were examined by the researchers while completing a cardiac wellness program. Participants ranged in age from 41 to 89 years, with an average age of 71. All participants followed a whole-food, plant-based eating regimen for six months or longer.

The prescribed diet was low in fat and high in fiber, with 75 percent of the total calories coming from complex carbohydrates, 15 percent from plant-based proteins, and 10 percent from fats. Fruits, vegetables, legumes, whole grains, and seeds and nuts were encouraged, along with a small quantity of egg whites and nonfat dairy (approximately 5 percent of total calories). Participants were instructed to avoid highly processed foods.

The study found that the participants demonstrated notable progress in blood glucose control, and 37 percent achieved complete diabetes remission. For the purpose of this study, remission was defined as maintaining a hemoglobin A1C level of less than 6.5 percent for at least three months without the use of surgery, medical devices, or medications intended to lower blood glucose.

The study also determined an overall reduction in the need for glucose-management medications among the participants, all of whom showed positive improvements in their body mass index, hemoglobin A1C, and fasting glucose levels, as well.

"It is a promising study that high-

lights the importance and efficacy of lifestyle interventions to address a global issue that has been historically tackled using pharmacological treatment," Dr. Florence Comite, an expert in precision medicine and the founder of the Comite Center for Precision Medicine & Health, told The Epoch Times.

Although other studies have documented a reversal of insulin resistance when incorporating a plant-focused diet, this study was unique because it didn't require participants to adhere to any type of calorie-restrictive or fasting protocols.

How Whole-Food, Plant-Based Diets Affect Diabetes

Experts have recommended nutritional lifestyle changes as a treatment approach for diabetes for decades. Traditionally, some diabetics were instructed to adopt a low-carbohydrate diet in order to control their blood glucose. While low-carb diets may cause

a reduction in blood glucose values, research suggests that those benefits don't last in the long term and are largely gone within a year.

Strict low-carb diets also eliminate or restrict many healthful foods, including whole grains, legumes, and fruits. Long-term adherence to a low-carb diet has been associated with increased mortality and a higher risk of cancer, Alzheimer's disease, and other medical conditions.

Now, there's significant evidence to support that a whole-food, plant-based diet has the power to improve diabetes symptoms and even put some individuals into complete remission. Research has shown that a plant-based diet is more effective in increasing insulin sensitivity than a conventional diabetic diet. Plant-based diets have also been associated with improved blood glucose control and improved insulin resistance. In general, recent evidence suggests that diets that are heavy in animal products—particularly red meat—are associated with a higher risk of diabetes, while plant-based diets are associated with a lower risk.

Researchers have explored many different potential mechanisms for the benefits of a plant-based diet. In general, plant-based, whole-food diets are often lower in calories, sugar, and fat, and

are more nutrient-dense. All of these factors are known to contribute to improved insulin sensitivity.

The Fiber Factor
Plant-based diets tend to be higher in fiber—essential for people with diabetes. High-fiber foods have the ability to decrease blood sugar spikes and to help you feel fuller longer. This is because fiber can lessen the body's glycemic response to carbohydrates.

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Plant-based diets tend to be higher in fiber—essential for people with diabetes. High-fiber foods have the ability to decrease blood sugar spikes and to help you feel fuller longer. This is because fiber can lessen the body's glycemic response to carbohydrates.

"Patients are encouraged to eat foods high in protein and fiber prior to consuming other carbohydrates, to minimize glucose spikes (highs) or dips (lows) after a meal," Dr. Comite said. "Fiber supports the gut microbiome [and] helps in the production of short-chain fatty acids," she said. "Reduced short-chain fatty acid production has been linked to Type 2 diabetes."

For example, findings of a recent study suggest improvement in glucose balance and insulin secretion among people who had increased their fiber intake to 50 grams per day. Another study found that a whole-grain, high-fiber diet can improve insulin sensitivity. High-fiber diets also have other posi-



Unprocessed plant foods have fewer calories, less sugar, less fat, and more nutrients.

STEPPING AWAY FROM REFINED CARBS

Plant-based foods, including whole grains, do have carbs, but they don't convert to sugar in the bloodstream quickly, unlike refined carbs.

"People might confuse plant-based with a high-carb diet, which could lead to higher intakes of rice, pasta, breads, and other white starches that are not as beneficial as whole grains," Dr. Comite said.

Complex carbohydrates, such as those found in whole grains, legumes, fruits, and starchy vegetables, are preferred for glucose control and have the power to correct insulin resistance.

For example, complex carbs originating from whole grains produce fatty acids when digested. These fatty acids actually improve insulin sensitivity when passed through the liver. Complex carbs also have the power to lower post-meal blood glucose levels, especially when paired with fiber.

"Consumption of whole grains and legumes, which are high in fiber, reduces [post-meal] glucose," Dr. Comite said. "This approach has important implications for prolonged glucose control and the proactive prevention and reversal of prediabetes and even diabetes."

Still, Dr. Comite said that a plant-based diet isn't a perfect fit for everyone.

"Individuals who cannot maintain adequate glucose will suffer with hypoglycemia (low glucose). When hypoglycemia is revealed on a plant-based diet, adding alternative sources of protein makes a difference by correcting hypoglycemia and has reversed symptoms such as migraines, fatigue, lack of energy, mood, and sleep disturbances," Dr. Comite said.

Diabetes Remission Factors

Recent research has revealed that people in Type 2 diabetic remission have the ability to return to maximal insulin secretion rates and normal functional pancreatic beta cell mass, indicating that sustained remission can reverse diabetes altogether.

While remission is an excellent goal, many factors can affect a person's ability to reasonably accomplish it. Eating habits, weight loss, exercise, stress levels, sleep habits, and alcohol use all play important roles in whether a person can realistically achieve diabetes remission.

Unfortunately, diabetes remission can be especially difficult—and sometimes impossible—for patients with genetic predispositions, severe

diets. Saturated fats have been found to cause harm to pancreatic cells, which influence insulin production. More specifically, when beta cells in the pancreas are damaged, their ability to produce insulin in response to increased glucose levels is inhibited.

Because saturated fat is a known contributor to insulin resistance, a low-fat, plant-based diet is recommended for those attempting diabetes remission.

Quality Carbohydrates Are Complex

Carbs are often seen as the "bad guy" when discussing diabetes. However, it's important to note that carbohydrates aren't inherently bad, even for diabetics. What matters more is the quality of the carbohydrates that you consume.



Enjoy nourishing breads made with whole grains.

insulin resistance because of age, or a prolonged history of diabetes.

Still, even if complete remission isn't possible for some patients, improved glucose control while decreasing medication reliance is a worthwhile goal that can improve quality of life.

Dr. Comite said that while a plant-based diet can be a critical aspect of remission, patients are likely to have better success if they implement exercise, stress management, and improved sleep habits into their routines.

"Losing fat and gaining muscle improves insulin sensitivity and glucose utilization," Dr. Comite said. "Stress and poor sleep can negatively alter glucose metabolism."

How to Implement a Whole-Food, Plant-Based Diet

Any significant lifestyle change can be challenging, and switching to a whole-food, plant-based diet is no exception.

Meal planning can help you stay on track with your healthy eating goals. Prepping certain foods ahead of time and storing them in your refrigerator or freezer can make the process even easier.

Some easy plant-based foods to prepare for use in meals include:

- Cooked whole grains (brown rice, oats, quinoa, farro).
- Cooked legumes (beans, lentils, chickpeas).
- Cooked plant-based proteins (tofu, tempeh, seitan).
- Cooked vegetables.
- Washed fruits.
- Unsalted nuts and seeds.

Dr. Comite recommends that her patients use a continuous glucose monitoring (CGM) device—regardless of their state of remission—because CGM "allows patients to own their decisions and reveals the effects of food, beverages, activities, and other habits, on glucose response. The impact can be enormous, as 'cause and effect' is immediately acknowledged and appropriate reactions will follow

if taken seriously."

That said, one of the reasons that many people turn to a high-fat, low-carb diet is because such CGM may indicate healthier blood sugar ranges. This effect, however, doesn't accurately reflect the long-term health benefits and risks of the diet.

Study Limitations and Implications

Diabetes is the most prevalent non-contagious disease in the world, and it carries many health risks and comorbidities, including cardiovascular disease, stroke, neuropathy, retinopathy, and more. Diabetes is "deadlier and far more common than people think," Dr. Comite said.

Fortunately, dietary lifestyle changes are an effective diabetes treatment and can cause remission, thus decreasing the dangerous risks associated with it.

While low-carb diets may cause a reduction in blood glucose values at the beginning, research suggests that those benefits don't last in the long term and are largely gone within a year.

This particular study had a few limitations, including a small sample size and the lack of a control group. Dr. Comite said that the researchers also indicated that "their protocol consisted of other recommendations, such as avoiding all tobacco products (which, in theory, would help lower inflammation), limiting or even avoiding alcohol intake, and participating in regular exercise for a minimum of 150 minutes per week." Thus, it's unclear as to what level the participants adhered to these other recommendations, in addition to adopting the plant-based diet.

However, the study does provide encouraging evidence of the positive role that a plant-based diet can have on diabetes remission. It also confirms that diabetes remission through a plant-based diet—without the need for calorie restriction or fasting—is possible, which can make long-term dietary compliance easier for some patients.

"This study adds hope [and] validity to the fact that diabetes can be reversed," Dr. Comite said.

Ayla Roberts is a registered nurse and freelance writer. She holds both a bachelor's and master's degree in nursing and has worked in a variety of clinical and academic roles.

4 Supplements to Combat Parkinson's Disease

Vitamins B, D, and E and coenzyme Q10, show promise in reducing Parkinson's disease risks and symptoms

By George Citroner

As the incidence of Parkinson's disease reaches alarming levels, researchers are intensifying their efforts to discover novel drugs that can alleviate symptoms or delay the progression of this debilitating neurodegenerative disorder.

Emerging evidence suggests that certain vitamins and supplements may hold the potential to support individuals diagnosed with Parkinson's or even to reduce the risk of developing the disease altogether.

Vitamin B6 May Cut Parkinson's Risk

Vitamin B6, also known as pyridoxine, is an essential nutrient for people with

Parkinson's disease. It plays a crucial role in producing neurotransmitters, including dopamine, which is diminished in Parkinson's patients.

A 2015 review of 10 studies found that a higher dietary intake of vitamin B6 was linked to a significantly reduced risk of developing Parkinson's disease.

Another study revealed that levodopa, an amino acid and the primary treatment for Parkinson's symptoms, may reduce B6 levels. Researchers concluded that monitoring patients for B6 deficiency is crucial.

Vitamin E May Prevent Condition

Vitamin E is a potent antioxidant in nuts, seeds, fruits, and vegetables. In a case-control study involving 100

Parkinson's patients and 100 healthy controls, higher dietary intake of vitamin E was associated with reduced disease risk, regardless of age and sex.

Researchers investigated the effects of vitamin E on the substantia nigra, a region of the brain linked to Parkinson's disease. Their findings suggested that a long-term, high-dose dietary supplementation of vitamin E could potentially prevent or treat the disorder. By providing protective levels of the vitamin, this approach aims to enhance the substantia nigra, which is responsible for controlling movement.

Vitamin D Deficiency Observed in Patients

Vitamin D is essential for maintaining bone health, and emerging studies indicate its potential benefits for people with Parkinson's disease.

Recent research suggests that vitamin D is crucial for brain development and normal brain function. Moreover, vitamin D deficiency has been associated with various neurological disorders, including Parkinson's. There is also evidence that low vitamin D levels in Parkinson's patients are associated

with impaired movement.

Research has also found a positive correlation between higher vitamin D levels and improved cognitive abilities, such as attention, working memory, immediate recall, and delayed recall in Parkinson's patients.

Vitamin-Like Antioxidant Protects Brain Cells From Damage

Recent research indicates that people with Parkinson's disease exhibit depleted levels of coenzyme Q10 (CoQ10), an antioxidant, in their brains. While a regular diet provides about 5 milligrams of CoQ10 per day, the body itself produces the majority. Although no specific daily requirement has been established, approximately 500 milligrams per day is estimated as necessary.

Clinical trials have explored CoQ10's potential as a treatment for Parkinson's disease. In a phase 2 clinical trial, CoQ10 was deemed safe and well-tolerated at doses up to 1,200 milligrams

per day. Compared with the placebo group, those taking CoQ10 experienced less disability, with the highest dosage showing the most significant benefit. The study concluded that CoQ10 appeared to slow the progressive deterioration from Parkinson's.

Benefits of Diet and Supplements for Parkinson's Patients

In addition to supplements, dietary changes have been suggested as beneficial for Parkinson's patients. A diet rich in fruits, vegetables, and fish has been associated with a lower risk of Parkinson's.

Some foods such as fava beans and Mucuna puriens naturally contain levodopa, but the concentration is too low to have a significant effect, Dr. Guy Schwartz, co-director of the Stony Brook Parkinson's and Movement Disorders Center, told The Epoch Times.

"It would take a very high volume of these legumes to mimic the effect of levodopa," he said.

The limited number of studies in this area can be attributed to the significant costs involved, as conducting extensive research on supplements that may not yield any benefits can be financially burdensome, Dr. Schwartz said.

"But they're being examined; there are some drugs in clinical trial that are purported to slow progression," he said. "So we're waiting for those results."

One promising new drug is a cough medicine commonly used outside of the United States called amroxol.

Dr. Schwartz noted that supplements' effects remain uncertain until they're thoroughly studied with a significant number of participants. He recommended a balanced diet and highlighted the importance of scientific evidence before recommending supplements.

"We don't know what is the therapeutic dose of a drug or supplement," he said.

Despite these promising studies, vitamins and supplements are not a substitute for medical treatment. People with Parkinson's should consult their doctors before introducing new supplements or making radical dietary changes.



▲ As the prevalence of Parkinson's disease increases, researchers are taking a closer look at dietary factors that can significantly alter the risk or progression of the disease.

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Could a Carbohydrate Cure Alzheimer's?

Continued from Page 13

All aspects of cognitive function were tested using a range of neuropsychological tests.

After the cognitive testing, the participants were given an aloe polysaccharide nutrient complex composed of polysaccharides, antioxidants, omega-3 fatty acids, and other phytonutrients. Participants took one teaspoon (2.5 grams) by mouth four times daily for 12 months.

The addition of the dietary supplement represented the only change made to the patient's lives over the 12-month study period—no changes were made to their diet, physical activity, or behavior, and they kept taking any previously prescribed medications.

Participants came in every three months throughout the study period for neuropsychological assessments. At 12 months, they had their blood drawn again to reassess their immune systems and markers of inflammation.

Amyloid-beta is the main component of amyloid plaques, extracellular deposits found in the brains of people with Alzheimer's disease.

Changes in cognition were assessed using the ADAS-cog, or Alzheimer's Disease Assessment Scale Cognitive Score, a widely used tool in dementia research and considered the benchmark measure for assessing cognition in studies of dementia. The

ADAS-cog has 11 subscales that evaluate memory, orientation, attention, language, reasoning, and constructional and ideational praxis, which are combined to create a total cognition score.

Cytokine and growth factor levels were also evaluated via blood tests at the beginning of the study (baseline) and 12 months. Cytokines and growth factors play a central role in the immune system and, according to the study, are involved in a variety of immunological, inflammatory, and infectious diseases. They are also involved in neuroinflammation, which is inflammation within the brain or spinal cord. Neuroinflammation is linked to the pathogenesis of Alzheimer's disease. Twelve cytokines, both pro and anti-inflammatory in total, were evaluated.

Study Results

Mr. Lewis and his team found that from baseline to 12 months, the Alzheimer's patients demonstrated significant and

sustained improvements in cognitive functioning at the nine- and 12-month marks using the ADAS-cog test.

They also showed a significant improvement in overall immune function and inflammatory markers thought to lead to reduced inflammation in the brain. The participants also exhibited a 300 percent increase in the production of adult stem cells, thought to lead to the repair of neuronal areas.

These cells have a self-renewal capability and can differentiate into all cell types.

Regarding one of the inflammatory markers measured, the study states:

"We also found a substantial drop in VEGF levels at the 12-month follow-up assessment. Others have suggested that VEGF might be linked to the progression of [Alzheimer's disease] through abnormal endothelial activation, resulting in neuronal loss and [amyloid-beta] deposits."

VEGF, or vascular endothelial growth factor, is a proinflammatory cytokine, and lowered levels indicate there was reduced neuroinflammation.

Amyloid-beta is the main component of amyloid plaques, extracellular deposits found in the brains of people with Alzheimer's disease.

Levels of TNF-alpha—another inflammatory marker the study measured—also declined from baseline to 12 months.

"TNF-alpha and other cytokines have been shown to be elevated in the cerebrospinal fluid and plasma of persons with AD [Alzheimer's disease] compared to controls," the study noted.

Additional Alzheimer's Research

In the years since Mr. Lewis's initial study, similar studies using various polysaccharides have affirmed his findings.

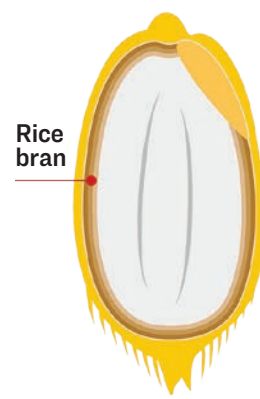
A 2023 study in rats with Alzheimer's disease using a polysaccharide from *Schisandra chinensis* showed that the rats had improved learning and memory, decreased brain inflammation, and restored intestinal barrier integrity.

The polysaccharides from aloe vera had a remarkable effect on Alzheimer's patients, one study found.



INTHON MAITRISAMPHAN/SHUTTERSTOCK

Researchers found polysaccharides from hydrolyzed rice bran may support cognition.



Rice bran



An in vitro and in vivo study using rats that was published in 2021 demonstrated the efficacy of a polysaccharide derived from *Bletilla striata* for preventing and alleviating the effects of Alzheimer's disease through its antioxidant and anti-inflammatory effects. The authors concluded that the polysaccharide used in the study could be a potential therapeutic agent in the treatment of Alzheimer's disease.

In a randomized, double-blind, placebo-controlled phase 3 clinical trial published in 2021, researchers gave a marine-derived oligosaccharide to 818 participants with mild to moderate Alzheimer's disease. Oligosaccharides are essentially smaller polysaccharides. At the end of the 36-week trial, the oligosaccharide group had significantly improved cognition, which was sustained over the entire 36-week trial period.

Such results fuel interest in the use of polysaccharides for disorders of the brain.

A review article published in 2022 titled "Protective Effects of Polysaccharides in Neurodegenerative Diseases states," "The use of polysaccharides has received significant attention due to extensive biological activities and application prospects."

The authors found that "polysaccharides can reduce oxidative stress, apoptosis, and neuroinflammation, regulate the balance of neurotransmitters, increase autophagy, ultimately decrease [amyloid beta] peptide formation and tau phosphorylation, [and] alleviate cognitive impairment in [Alzheimer's disease] models."

What Are Polysaccharides?

Polysaccharides are the most abundant carbohydrates found in food and are ubiquitous in plants, animals, algae, and microorganisms. Polysaccharides are defined as long-chain carbohydrates composed of monosaccharide units held together by glycosidic bonds. We usually think of these sugars as the body's primary source of energy.

Mr. Lewis explained that the emerging field of glycomics is demonstrating the importance of polysaccharides, or sugars, and how they are used in ways that go far beyond simply being a source of energy. Glycomics is the study of the full spectrum of sugars and their various effects. Discoveries in the field are revealing the ways that polysaccharides are used by every cell in the human body. These natural polysaccharides

shouldn't be confused with processed sugars such as white table sugar and high fructose corn syrup, which are detrimental to health and pervasive in the standard American diet. Glycomics research, which studies the entire spectrum of sugars, has found that some polysaccharides, such as mannose—in aloe vera—and fucose, present in some seaweeds, medicinal mushrooms, and algae, are vital for good health.

In fact, Mr. Lewis has conducted multiple studies on the effects of aloe polysaccharides on patients with Alzheimer's and multiple sclerosis, and he has conducted studies using polysaccharides from hydrolyzed rice bran with healthy adults and patients with HIV and non-alcoholic fatty liver disease with promising results.

Mr. Lewis was so encouraged by the results of those studies on polysaccharides that he created a supplement based on the aloe polysaccharide complex given to patients in the 2013 Alzheimer's study and has been taking it ever since.

Polysaccharides in Our Diet

When asked whether we are able to get enough polysaccharides in the average diet, Mr. Lewis told *The Epoch Times* that it's hard to know with any certainty. He says we likely ate more polysaccharides in the past but fewer today.

"When that shift occurred, along with genetic modification and our soil not being as nutritious anymore, and then, of course, the air and water pollution, it's definitely caused a shift not only in polysaccharide content of typical foods, but just in general, of vitamins, minerals, and other phytonutrients," he said.

When it comes to aloe vera, something that humans haven't historically consumed, Mr. Lewis said that to get it at therapeutic levels without using a supplement, one would have to drink buckets of the gel because it's 99 percent water. The polysaccharides in rice bran (in brown rice and not white rice), which he has also studied, would also have to be eaten in large quantities; but, he says, geography probably plays a role.

"People on our side of the planet, as opposed to maybe in Asia where rice historically has been a bigger part of the diet—Asians probably got a lot more of the beneficial polysaccharides than, say, Europeans and people in the Americas did, or do."

The studies Mr. Lewis and his colleagues have conducted involving polysaccharides using all-natural, nutrition-based supplements offer new hope for millions of Americans suffering from neurodegenerative diseases such as Alzheimer's and multiple sclerosis.

Mairelys Martinez, the study neuropsychologist said, "I have never seen more impressive changes in cognitive function in response to the dietary supplement in this trial compared to all of our other memory disorder studies."

Harness the Healing Force of Sleep

Continued from Page 13

Sleeping Well

Good sleep requires a flexible and consistent commitment. Sleep has two dimensions—quality and length—and you want to be good at both. On average, school-age children require about 10 hours of sleep each night, whereas adults aged 18 to 64 need seven to nine hours, and those aged 65 and older require seven to eight hours. If this isn't your reality or you routinely wake without feeling refreshed, you should take actions to resolve any issues. If the issues persist, you should speak with your health care team.

The consequences of inadequate sleep—also known as insufficient sleep syndrome—contribute to premature aging, metabolic and cardiovascular disease, high blood pressure, obesity, certain cancers, mental illness, and even early death.

If achieving seven to nine hours of sleep nightly feels overwhelming, try extending your sleep by 20 to 30 minutes each night over several weeks until you hit the target. This may require you to make important lifestyle changes to support sleep.

Stress resiliency expert Robyne Hanley-Dafoe uses a three-day sleep average to mitigate anxiety on days when sleep time is cut short. If her schedule pulls her off track, she goes to bed a little earlier the next night. Managing sleep in three-day chunks keeps her from forcing rest, which can boost her stress.

"We pick up energy, thoughts, and emotions all day. It isn't realistic to expect to turn these off and enjoy restful sleep on demand," Ms. Hanley-Dafoe said.

"One of the goals that I have before I go to bed is to find a way to wind down and hold peace. I need to find a sense of stillness before I sleep."

She begins an unwinding ritual by emptying her short-term memory and placing tomorrow's to-do list on post-it notes. With these priorities accounted for, she said, they lose their authority and no longer distract her thinking or spark rumination.

Sleep is among the most critical factors for peak performance, memory, productivity, immune function, and mood regulation.

Shift workers, new parents, and individuals grappling with sleep disorders, persistent pain, or mental health issues often find sleep consistency elusive despite earnest efforts.

A racing mind, replaying an emotionally charged experience, general anxiety, or thoughts of self-doubt are well-known foes to sleep.

If you find yourself in a negative mental spiral or stuck in a scarcity mindset, Ms. Hanley-Dafoe recommends practicing gratitude as a way to tap into a feeling of rich energy, fulfillment, safety, and love.

"I go over the basics in my mind, starting with what I'm grateful for, and use gratitude reflections to knock myself out of a toxic hustle mode," she said.

Our genes may also play a significant



Get the morning sun on you within 30 minutes of waking up to reset your sleep-wake cycle.

role in the amount of sleep that each person needs and the quality of the time that we dedicate to it.

Scientists have identified several genes that are involved with sleep and sleep disorders, including genes that control the excitability of neurons and "clock" genes that influence our circadian rhythms and the timing of sleep. Additional research is needed to better understand inherited sleep patterns and the risk of sleep disorders, but there are some proven strategies to help you maximize the healing power of your sleep.

Establish a Relaxing Bedtime Ritual

An hour before you want to be asleep, begin your unwinding ritual. Dim the lights. Limit screen time. Set an intent to gear down.

A calming pre-sleep routine, void of emotional stress, prepares your mind and body for rest and will improve the quality of your sleep.

Activities such as taking a hot bath, reading, practicing slow, deep, rhythmic breathing, or listening to a mindfulness or meditation app are excellent pre-bedtime activities.

The idea here is to begin training your nervous system with these activities when the end of the day has arrived and it's time for sleep.

Consistency with this pre-bedtime ritual is important.

Avoid Late-Day Stimulants

Restrict caffeine after lunch. The lingering half-life of this stimulant can last six hours. So those three cups of regular coffee (totaling about 400 milligrams of caffeine) that you drank before lunchtime can still have an effect as bedtime rolls around. And if you like to get a boost from an afternoon coffee, it could cost you a truly re-energizing sleep.

Limit Alcohol Near Bedtime

Alcohol may hasten sleep onset, but it disrupts sleep quality later on as the body metabolizes it, leading to arousal and diminished deep sleep. This can impair memory, weaken concentration, and undermine physical coordination.

Balance Your Exercise Routine

Strive for 150 minutes of moderate-paced physical activity every week. Doing so will significantly improve your sleep quality.

Reserve high-intensity workouts for earlier in the day. Relaxing exercises, such as gentle yoga or a casual neighborhood stroll after dinner, can also be used to ease you into a good night's sleep.

Refrain From Late-Night Heavy Meals

Large meals or snacks close to bedtime

can hinder your sleep and challenge your weight management efforts. When you eat, you tell your body it needs energy to function. Eating less before bedtime tells your body that there's nothing to do but relax and recharge.

Maximize Morning Sun Exposure

Exposure to morning sunlight in the first 30 minutes after waking resets your sleep-wake cycle. Likewise, dimming the lights an hour before bed lets your body know that it's almost time to get some shut eye.

Associate Bed With Sleep

If you're struggling to fall asleep, avoid activities such as watching TV or surfing the internet in bed. If sleep remains elusive after an hour in bed, get up and do something calming until you feel sleepy. Then return to bed. This strategy associates your bed with sleep, not struggle or other activity.

If achieving seven to nine hours of sleep nightly feels overwhelming, try extending your sleep by 20 to 30 minutes each night over several weeks until you hit the target.

Monitor Your Sleep Patterns

Utilize smart tech to track your sleep trends. These gadgets can record sleep duration, heart rate, breathing patterns, and more, linking the quality of your daytime performance with your nighttime rest.

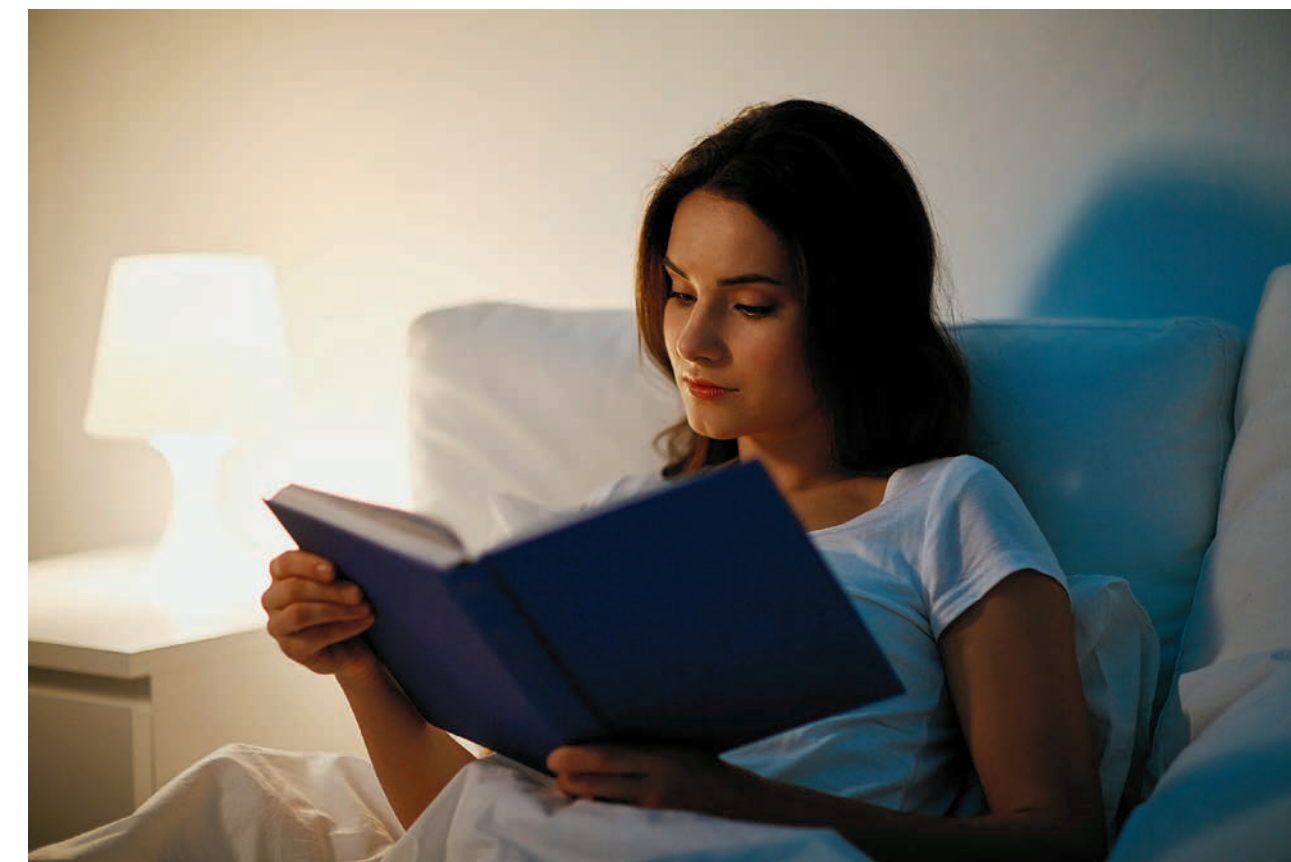
Seek Feedback

If you share a bed, talk about your sleep habits with your partner. Snoring, gasping, or choking during sleep could indicate sleep apnea. Rest assured, there are treatments—from weight loss strategies to breathing devices—that can significantly enhance sleep quality.

By adhering to these strategies, you'll enhance your sleep quality and upgrade your overall health and performance. With practice, you'll begin waking up feeling more vibrant and ready to tackle the day.

Dr. Dwight Chapin, B.Sc., D.C., is an award-winning chiropractor, co-owner of a large multi-disciplinary wellness clinic in the Greater Toronto Area, team chiropractor for the Canadian Football League's Toronto Argonauts, and onsite clinician for The Globe and Mail. He is also the author of "Take Good Care: 7 Wellness Rituals for Health, Strength & Hope."

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A calming pre-sleep routine, like a warm bath or reading, can ease you toward sleep.

How Gut Microbiome Influences Mental Health

Science reveals that the microbiome profoundly affects mental health and much more

By Michelle Standlee

Can our tiny internal world of bacteria, fungi, viruses, and other microorganisms hold greater significance than we think when it comes to mental health?

Current researchers think so, and so did Hippocrates, who famously said about 2,500 years ago that “all disease begins in the gut.”

The idea that the gut is closely connected to overall health, including mental health, has become an important area of research as scientists uncover unexpected and important influences of the gut microbiome—the community of microbes living in our gut.



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Shawn Talbott, doctorate in nutritional biochemistry

Mindful Microbiome: The Scientific Consensus

Current research, including a 2019 study published in the American Physiological Society Journal, reveals a complex, captivating relationship between the gut microbiome and the intricate network called the gut-brain axis.

In a 2016 Cell article, scientists highlighted that the past two decades have seen a surge of studies uncovering the significant influence of microbiota on the physiology and metabolism of mul-

ticellular organisms, with implications for health and disease.

The gut microbiome affects mental health by producing neurotransmitters, influencing the immune system, and affecting emotional resilience. This sophisticated communication system is like a superhighway that involves biochemical and nervous system pathways, running in two directions and connecting the brain and gut.

“The science behind this is solid,” Shawn Talbott, who holds a doctorate in nutritional biochemistry, told The Epoch Times. Mr. Talbott has studied stress resilience and the microbiome for the past 20 years.

“We’ve known for over 100 years that there are bacteria in the gut, but the reason this is exploding is now is we can measure the microbiome at a level of sensitivity that we couldn’t 10 years ago,” he said.

At one point, scientists even thought that bacterial cells in the body outnumbered human cells 10-fold, but newer research has suggested the ratio might be closer to 1-to-1.

What Makes the Gut Your ‘2nd Brain’?

While the gut does produce a considerable amount of serotonin, dopamine, and gamma-aminobutyric acid, key neurotransmitters involved in feelings of happiness, motivation, and relaxation, respectively, the topic remains an active area of investigation.

Serotonin, in particular, has been a neurotransmitter of focus for some time. A 2020 study published in the Advances in Nutrition journal showed that more than 90 percent of serotonin is located in the gastrointestinal tract.

“How you feel is not just in your head; it’s also in your gut,” Mr. Talbott said.

Emerging science suggests the microbiome profoundly influences the immune system, with significant implica-

tions for mental health.

Imbalances in the microbiome, also known as dysbiosis, can trigger inflammation, linked to various psychiatric disorders, including bipolar disorder and schizophrenia.

The relationship among the microbiome, gut, and brain also plays a crucial role in regulating emotions and responding to stress.

Recent studies have shown that mice raised in a sterile environment with no bacteria exposure exhibited altered stress responses and anxious behaviors. These findings indicate that exposure to diverse beneficial bacteria may establish a strong foundation for emotional resilience throughout life.

Microbiome Diversity: The More, the Merrier

Studies reveal that greater microbial diversity is associated with improved mental health. Conversely, a limited variety of gut microbes has been linked to an increase in symptoms of anxiety and depression. Moreover, individuals with conditions such as post-traumatic stress disorder and autism spectrum disorder tend to exhibit lower gut microbe diversity.

The Best Foods for a Healthy Gut

It’s very important to eat a whole-food diet to provide the microbiome with the healthy nutrients and fiber that bacteria need to thrive, according to Mr. Talbott. The Mediterranean diet, renowned for its nutritional value, including abundant fiber and antioxidants, can signifi-

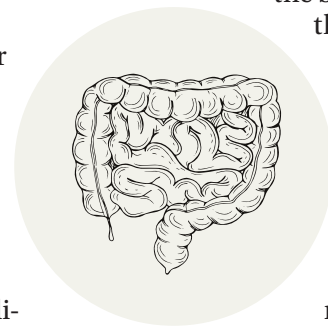
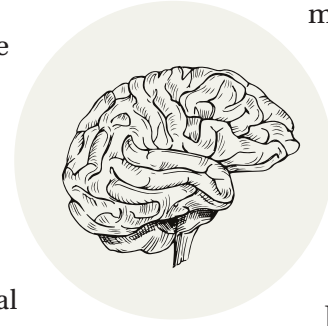
cantly contribute to mental wellness, he added.

A variety of foods such as vegetables, greens, fruits, chickpeas, basil, and garlic serve as excellent sources of prebiotics, nutrients that feed beneficial bacteria. These prebiotics act as the foundational building blocks for cultivating a robust and healthy microbiome. Also helpful are cultured foods such as Greek yogurt and sauerkraut, known as probiotics, because they provide live beneficial bacteria.

The Gut-Brain Axis: New Perspectives and Potential Treatments

Scientists are continually uncovering new information about the relationship between the microbiome and the brain. With each revelation, they gain fresh perspectives on mental illness prevention and treatment.

“We are still in the early days of understanding the microbiome and the gut-brain axis,” Mr. Talbott said. “We might learn so much more in the next five years of how gut-brain axis signaling happens,” he added. “We don’t know how the science is going to develop. We are at the forefront of it.”



The brain and gut work together to regulate emotions and stress.

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Michelle Standlee, R.N., is a health reporter for The Epoch Times. She has a background as a registered nurse and medical writer, covering topics including mental and behavioral health, women’s and children’s health, traditional health care, complementary medicine, and alternative medicine.

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