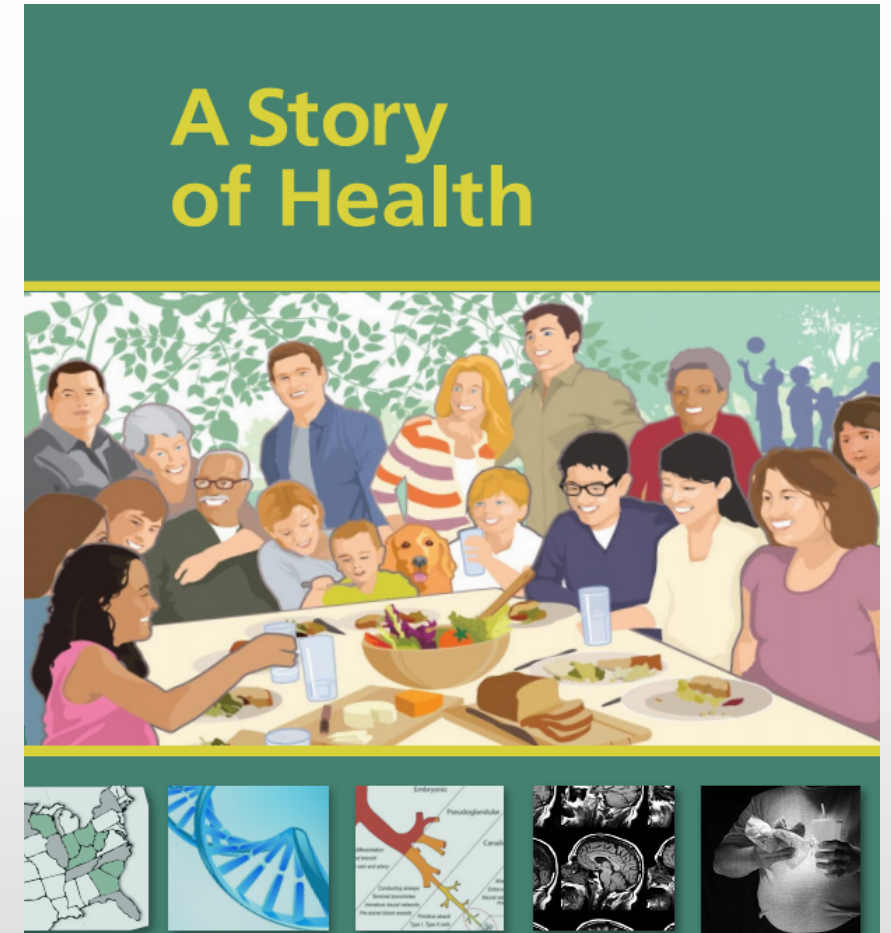


Cognitive decline, dementia, and Parkinson's disease: Environmental contributors and potential pathways to prevention

Collaborative on Health and Environment
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Science and Environmental Health Network



<https://tinyurl.com/y4g6ofv9>

Our stories explore how many aspects of our lives, and what we are exposed to in our environments, influence health across the lifespan—from the beginning of fetal development to elder years—and how they can promote health and resilience, or disease and disability.

Important determinants of health come from the natural, built, chemical, food, economic, and social environments.

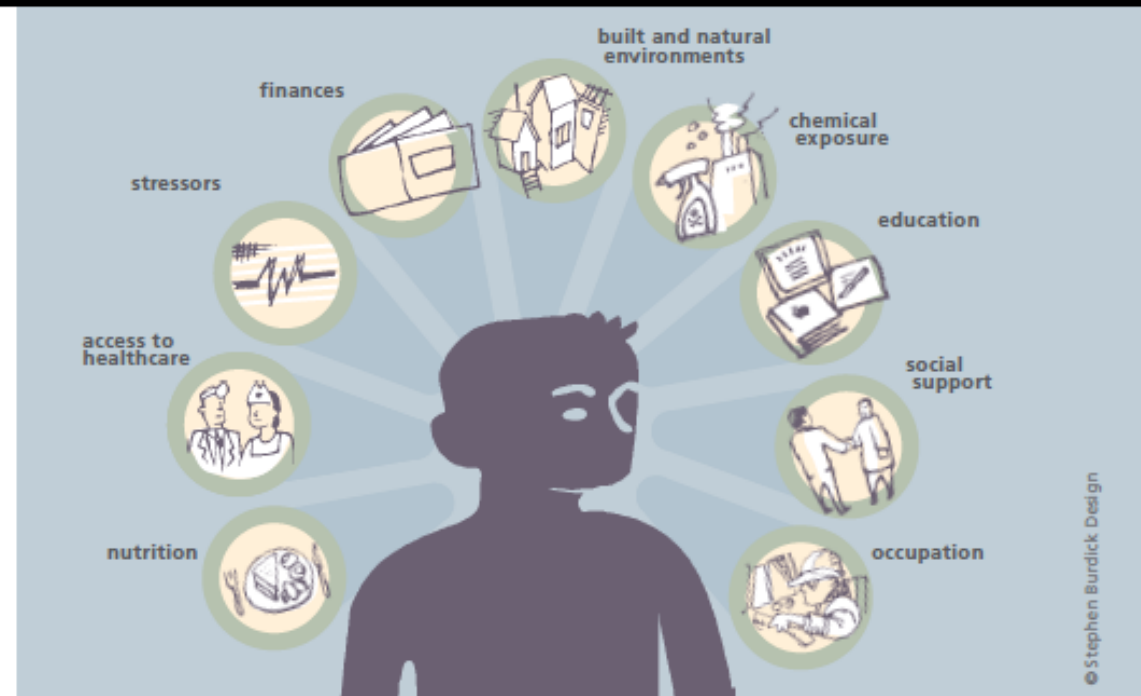
These environments are further expressed through such things as education, housing, nutrition, access to health care, social supports and more.

Many of them interact to create the conditions for health and wellness, or vulnerability to disease.



Watch: Pediatrician Larry Rosen addresses the environment and family health. (2 min.)

Lawrence D. Rosen MD is an integrative pediatrician and founder of the Whole Child Center.



Complex interactions occur among many variables and across individual, community, and societal levels.

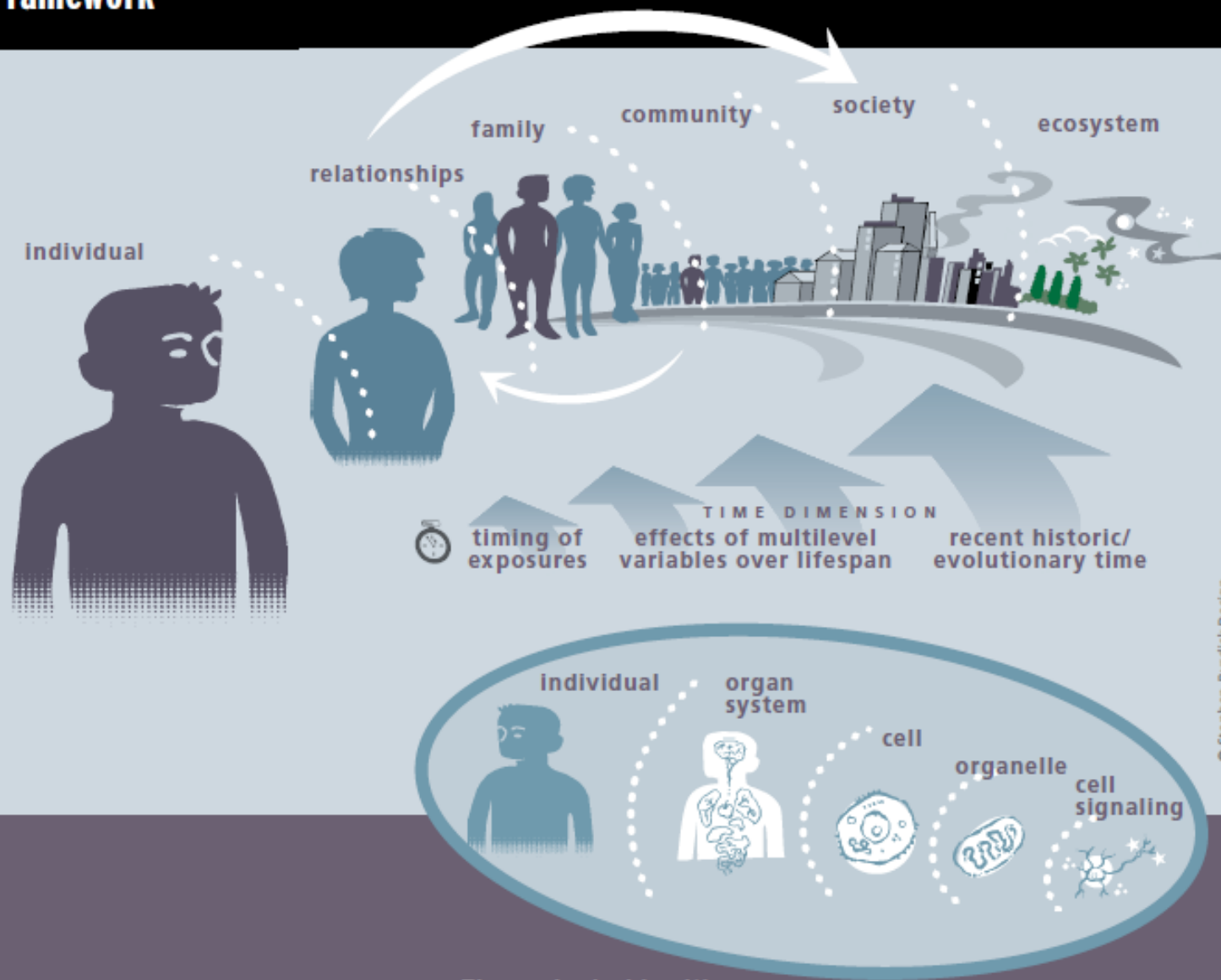
Rarely is one particular thing responsible for health or disease, so we refer to this as a multifactorial (or ecological) approach, the best way to promote health and prevent disease.

INTRODUCTION Ecological Health Framework

The ecological framework can include multiple levels from sub-cellular to societal.

It is not hierarchical in the sense that one level is more important than another, but rather in the sense that individual biology is progressively nested within the person, family, community, society and ecosystem.

The interactions and feedback loops within, across, and among these levels are complex and variable. They exert their influences on health across time.



The ecological health framework also extends to the sub-cellular level.

COGNITIVE DECLINE Sam's Story

Sam is a 72 year-old widower from the “Baby Boom” generation who grew up and still lives in the Boston area.

His wife of over 40 years passed away last year. Since her death he has not been as social and doesn't see friends and family as much as he used to.

Sam's family is concerned that he is forgetting things more than usual and missing appointments. They wonder if this is just normal for someone his age or if there is something else going on with his brain function.

They don't want to insult him and wonder how to approach the topic with him.

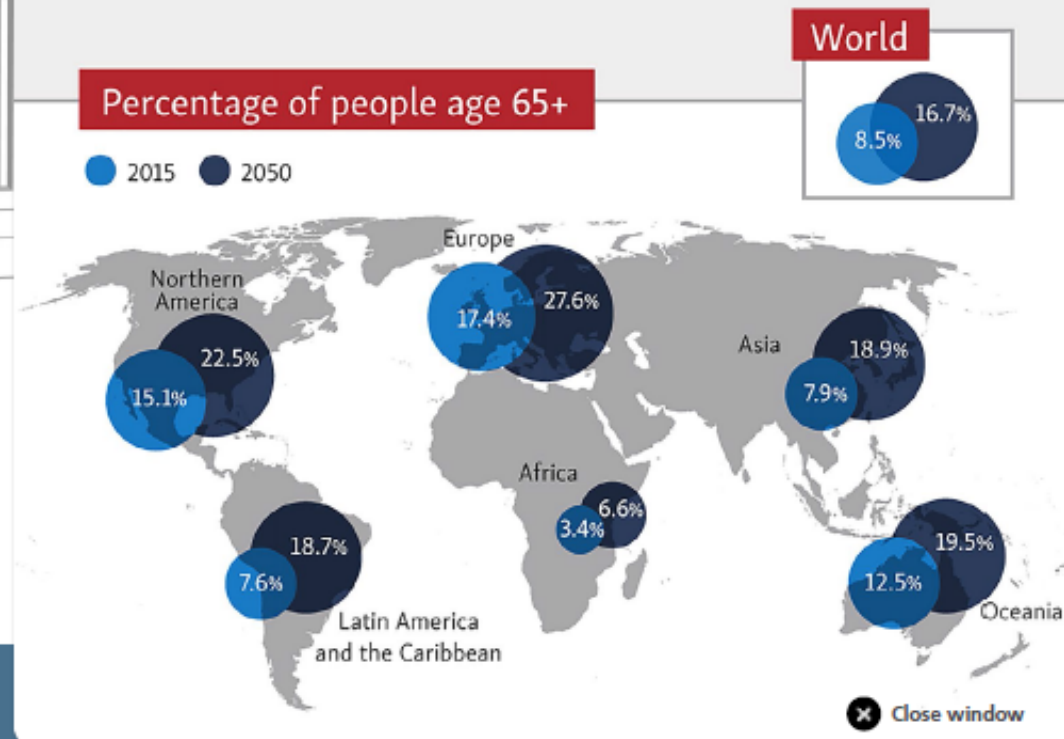
+ Demographic shifts in global population

+ Are all countries aging at the same pace?



Are all countries aging at the same pace?

The pace of aging is not the same around the world. Regions vary in the size and projected growth of their populations age 65 and older. Many of the European countries have the oldest populations, a trend that will continue through 2050. The older population in Asia and Latin America will more than double between 2015 and 2050, and will also increase in Northern America.



For more information, see Federal Interagency Forum on Aging-Related Statistics (www.agingstats.gov) Older Americans 2010, and U.S. Census Bureau (www.census.gov) An Aging World: 2015, 65+ in the United States: 2010, and The Older Population: 2010.

Sam's son Jessie and his wife Lisa decide to invite him over for dinner for a discussion. They also invite Sam's good friend, Patrick, a Marine who served with Sam in Vietnam.

Sam is an hour late so it gives Jessie, Lisa and Patrick some time to talk. Patrick says, "I'm worried about him. He is more and more forgetful."

Lisa jumps in... "We have noticed the same thing. He also repeats himself. I worry that he is alone too much and sometimes wonder if he needs to move in here with us?"

+ Forgetfulness:
Normal or Not?

+ Dementia and
Mild Cognitive
Impairment

[Link: Alzheimer's Association: Resources for caregivers](#)



[Watch: What is Mild Cognitive Impairment \(MCI\)? Emory University AZ Disease Research Center](#)

Dementia and Mild Cognitive Impairment

Dementia is a general term for a persistent disruption of mental processes marked by memory disorders, personality changes, and impaired reasoning. Dementia can have a number of different causes, the mix of symptoms can vary in their onset and progression, and the underlying pathology can differ considerably. Diagnostic names given to dementias associated with differing kinds of brain pathology include Alzheimer's disease, vascular dementia, dementia with Lewy bodies, mixed dementia, fronto-temporal lobar degeneration, Parkinson's disease dementia, and several other rare varieties.

People can also have decline in cognitive function without the progressive brain changes of Alzheimer's or other degenerative brain diseases. Common causes that can often be reversed with treatment are depression, side effects of medications, thyroid problems, certain vitamin deficiencies and excessive use of alcohol.

Finally, symptoms associated with normal aging or mild cognitive impairment (MCI) may be difficult to distinguish from early signs of what may develop into clear-cut dementia

and are often a source of anxiety. Symptoms of MCI—somewhat more severe than those associated with normal aging—may include trouble remembering names or appointments, sometimes having trouble finding the right word, occasionally needing help with calculations, or occasionally misplacing things. Although troubling, these symptoms of MCI are not necessarily progressive. Over time, it will become apparent if they are early evidence of a more serious degenerative disease that may lead to dementia. Meanwhile, medical evaluation can help identify underlying conditions amenable to interventions that may help slow progression or offer reassurance that the troubling symptoms are common age-related changes.

A new report from the American Academy of Neurology (Petersen, 2018) estimates that 15.8 percent of people in the United States age 60 and older have MCI (roughly 11.6 million people in 2018). However, because this estimate is not based on biomarker evidence, researchers do not yet know how many of these people have MCI as an early manifestation of Alzheimer's and how many have MCI due to other causes.

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COGNITIVE DECLINE Sam's Story

Finally, Sam admits he hasn't been getting out much since his wife died, as she was always the one who organized the social activities.

They talk more and Lisa mentions Sam's yearly physical at the VA in a couple of weeks. Lisa asks if she could go with him so they could ask some questions together and she could be his "health advocate."

+ Definition: health advocate

Sam reluctantly agrees. He already dislikes going to the doctor, much less having someone with him.

+ Importance of social interaction on cognitive health

More information:

Determine a "walkability score"

[AARP's Livable Communities: An Evaluation Guide](#)

[National Institute on Aging: Social Interaction and Health](#)

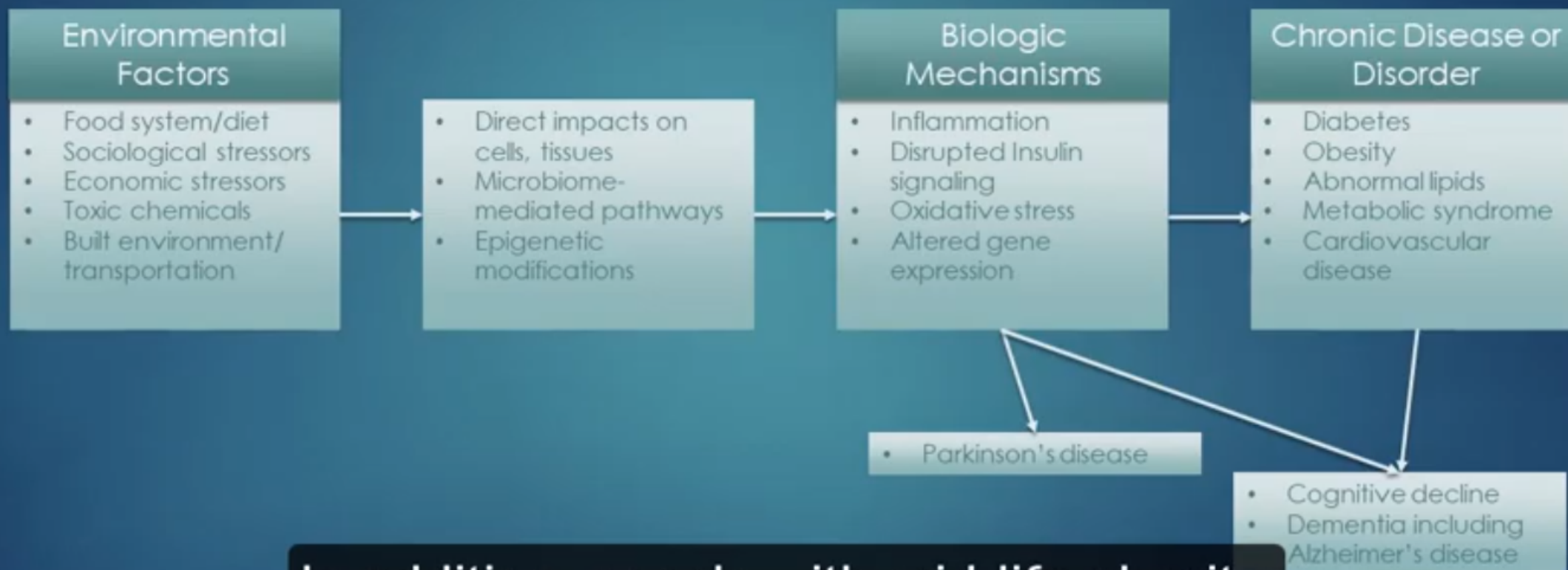


Watch: Environmental drivers of chronic disease, cognitive decline





Environmental Drivers of Chronic Disease and Cognitive Decline



In addition, people with mid-life obesity, diabetes, and abnormal serum lipids

Dr. Gomez asks Sam a few more questions about his depression to get a better understanding of it.

After he finishes his questions, Dr. Gomez says

Protective lifestyle factors:

- Avoid smoking
- Treat hypertension
- Prevent or treat hearing loss
- Social engagement
- Avoid excessive alcohol
- Regular exercise
- Healthy nutrition

Dr. Gomez tells Sam he'll get a call about the appointment in the near future.

Sam and Lisa head home. Lisa invites Sam over but he says he wants to go home.

Lisa drops Sam off at his house and asks him to let her know the date of the appointment with the specialist so she can schedule it. She says she'll call him tomorrow.

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Health benefits of physical activity

+
Online references:
[NIH: About the DASH Eating Plan](#)
[Mayo Clinic: Mediterranean diet: A heart-healthy eating plan](#)

Health benefits of physical activity



Increasing physical activity at any age improves many aspects of physical and emotional well-being. It is well-known to reduce risks of common chronic disorders such as diabetes, heart disease, obesity, and various kinds of cancer. Regular exercise such as walking at least 150 min. per week, for example, also

reduces the risk of cognitive decline and dementia. Regular exercise is an important component of a multifactorial approach to maintaining cognitive health and slowing decline. (Rakesh et al., 2017; Alz Assoc; Lautenschlager et al., 2008) Increasing physical activity may also help prevent and/or slow Parkinson's disease. (LaHue et al., 2016)

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Harvard School of Public Health
The Nutrition Source
www.hsph.harvard.edu/nutritionsource

Harvard Medical School
Harvard Health Publications
www.health.harvard.edu

+ Harvard Health Publishing: [The Healthy Eating Plate](#)

COGNITIVE DECLINE Sam's Story



Dr. Gomez asks Sam a few more questions about his depression to get a better understanding of it.

After he finishes his questions, Dr. Gomez says that it's completely understandable for Sam to feel depressed after the loss of his wife and that it may be contributing to his memory problems. While he recommends addressing this, Sam also needs to pay attention to other things, so Dr. Gomez is prescribing blood pressure medication for Sam to start and emphasizes the need for Sam to improve his diet and exercise routine. He gives Sam some handouts on the "DASH" and Mediterranean diets and some exercise routines he could start such as walking for 30 minutes every day. He explains that these diets are also beneficial to heart and brain health.

In addition, he says that based on everything he has heard he'd like Sam to see a specialist in neurology at the VA. He adds that at this point it is really a precaution.

This worries Sam. He is not happy to have to see another doctor but reluctantly agrees. Dr. Gomez tells Sam he'll get a call about the appointment in the near future.

Sam and Lisa head home. Lisa invites Sam over but he says he wants to go home.

Lisa drops Sam off at his house and asks him to let her know the date of the appointment with the specialist so she can schedule it. She says she'll call him tomorrow.



Health benefits of physical activity



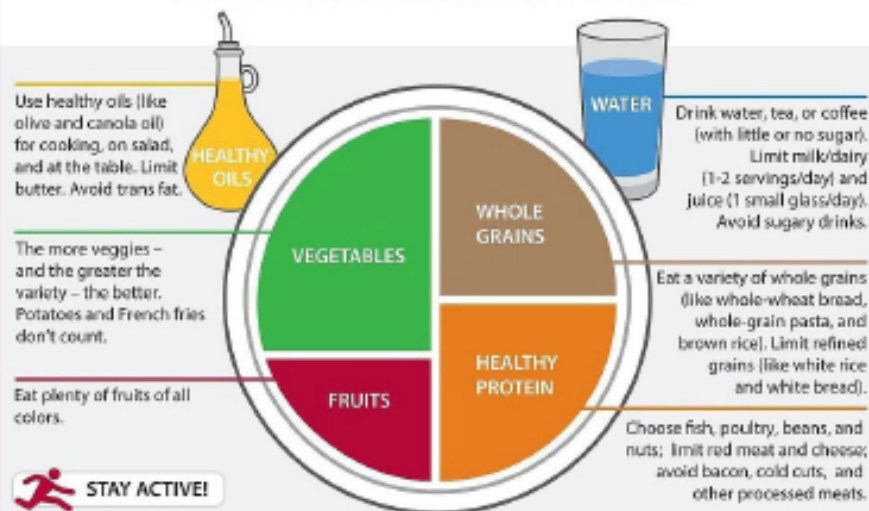
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HEALTHY EATING PLATE



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Harvard Health Publishing: [The Healthy Eating Plate](#)

COGNITIVE DECLINE Sam's Story

Sam and Lisa leave Dr. Todd's office. "Lisa, I feel like I've just gotten a wake-up call," says Sam as they leave. "I sure don't want my mind to get any worse." He vows to eat a healthier diet, including more fruits and vegetables.

The next day he calls Patrick to make plans to go walking at least three times a week in the morning and have coffee afterward. And he even checks out the prices at the local gym where Patrick is a member.

