



UNDERSTANDING DEMENTIA: WHEN MEMORY LANE IS NOT A STRAIGHT ROAD

Anastassia M. Mena^{1,2,3*}, Francesca B. Santos¹, Laura Jamieson¹, Madeleine P. McKenzie¹, Keely Matsusaki¹ and Antonio P. Strafella^{2,3,4}

¹School of Medicine, University of Limerick, Limerick, Ireland

²Temerty Faculty of Medicine, University of Toronto, Toronto, ON, Canada

³The Centre for Addiction and Mental Health, Toronto, ON, Canada

⁴Krembil Brain Institute, University Health Network (UHN), Toronto, ON, Canada

YOUNG REVIEWERS:



ANNABELLE

AGE: 9



LIJIA



NATASHA

AGE: 15

Dementia is a complex condition that affects the way people think, remember, and behave. It is common in elderly people, but it can also show up earlier in life. Dementia is a condition that encompasses a wide variety of cognitive diseases, which is why dementia is called an “umbrella term”. Scientists need to study dementia because it affects 50 million people worldwide! Because of this, a lot of research has been focused on treating dementia, and different medicines and other forms of management to help people with this condition have been revealed. Finally, when a loved one has dementia, it can be frustrating, sad, and confusing for the people around them. It is, therefore, important to recognize these feelings and to understand

that there are many ways to help people with dementia cope with their condition and assist them in their daily lives.

WHAT IS DEMENTIA?

Every year, we celebrate our birthdays and see the process of aging occur right before our eyes. We learn new things, gain new skills, notice changes in our bodies, and even grow taller! Aging is a natural process in which our bodies and minds change for many reasons. This aging process is completely normal—think of all the ways you differ from your parents or from older (or younger) friends and family members.

Some people may age abnormally, and this is commonly seen in a condition called **dementia**. Dementia is defined as a loss of memory, thinking, and reasoning skills. It can also cause changes in behavior and mood, to an extent that interferes with a person's daily life and activities. With normal aging, everyone can experience some typical changes in memory and brain functions like **cognition**, but these are often less severe than in dementia and they generally do not have a big impact on the lives of the aging person and their family.

Dementia affects more than 50 million people around the world, and this number is expected to double in the next 30 years as people live longer, because dementia is more common in older adults [1]. Not everyone will develop dementia as they age. The reason dementia occurs is not fully understood but we do know that it is caused by a loss of brain cells called **neurons** over time. Neurons communicate with each other to help us learn, create memories, make important decisions, and control our emotions.

Dementia is a condition, which means it refers to a *group of symptoms* rather than a specific disease. Many different diseases fall under the category of dementia (Figure 1). The most common type of dementia is called **Alzheimer's disease**, in which abnormal products made by neurons get stuck to parts of the brain that affect important functions like memory.

WHAT IS IT LIKE TO HAVE DEMENTIA?

Dementia is a highly variable condition, meaning that different people can have different symptoms, making it challenging to diagnose and treat. Diagnosing dementia often starts in the home, with family members noticing early signs [2]. Early signs of dementia can vary in each person, but can include trouble remembering the words they want to use for a sentence, trouble with daily tasks, or changes in mood and behavior (Figure 2). These changes are often hard to spot in the beginning, but they become more obvious over time. People with

DEMENTIA

A condition in which brain skills decline enough to interfere with daily life, affecting memory, reasoning, and communication.

COGNITION

The mental processes involved in acquiring knowledge and understanding, including thinking, memory, learning, and decision making.

NEURONS

Special types of cells in your body that act as a messenger. They are specialized for the brain and help carry signals between your brain, spinal cord, and the rest of your body, allowing you to think, feel, move, and even form memories.

ALZHEIMER'S DISEASE

The most common cause of dementia; it progressively impairs memory, thinking, and behavior.

Figure 1

Dementia often develops at the same time as other conditions, which is why it is sometimes referred to as an “umbrella term”. In other words, several diseases that affect brain function, behavior, and most commonly, memory, are grouped together under the general term of “dementia”.



Figure 1

dementia can become confused, frustrated, sad, or scared because they do not know what is happening. They might worry about being a burden to family members or feeling left out when they cannot join in on activities that they used to love. They may also feel upset if they are told they can no longer do important things, like driving or taking care of themselves.

Figure 2

As people grow older, one of the biggest symptoms they experience due to the changes happening in their brains is the ability to remember things. Sometimes older people can misplace things or have a hard time remembering a name or a place, but this happens to everyone. Forgetfulness is a normal part of aging. However, dementia patients experience these memory problems more severely, affecting their daily activities and relationships.



Figure 2

Overall, dementia causes very big changes in someone's life. For this reason, it is important to support people with dementia as they go

through these life-altering changes. Dementia can also be hard for the friends and family of the affected person. Unfortunately, there is no cure for dementia, but luckily there are many doctors dedicated to helping dementia patients and lots of ongoing research in the field. There are also many resources available to help people with dementia live happy and fulfilling lives.

IS THERE A CURE FOR DEMENTIA?

Scientists have not found a cure for dementia yet. However, there are ways to manage symptoms and improve daily life. Donepezil is a medication that can be helpful for people with dementia. This medicine works by preventing the breakdown of a chemical messenger in the brain called **acetylcholine**. Keeping more acetylcholine in the brain helps improve communication between neurons, so donepezil helps people with dementia to think more clearly and remember things better. This helps them manage some of the symptoms of the condition, but it is not a cure.

HOW CAN WE HELP SOMEONE WITH DEMENTIA?

Having a family member with dementia can bring up a lot of emotions. You might feel sad or angry about the changes that are happening. You may also feel bored when they say the same things over and over. You might even worry about catching dementia or developing it yourself. All these feelings are normal and it is okay to be upset. But remember, dementia is not contagious like a cold or flu, and just because someone in your family has dementia, it does not mean that you will get the condition, too.

We talked about an example of medication for dementia, but there are also other helpful strategies called non-drug treatments [3]. These treatments focus on making life easier and more enjoyable for people with dementia (Figure 3). It is important to treat people with dementia with kindness and patience. You can make a big difference by spending time with them and doing things they enjoy. Even if they do not remember everything, they will feel your love and support.

Here are some activities you and your loved one with dementia might enjoy:

- Looking at old photographs.
- Playing simple games.
- Going for a walk.
- Playing music, singing, or dancing together.
- Sharing stories.
- Drawing pictures.
- Celebrating special events together.

ACETYLCHOLINE

A type of chemical messenger, called a neurotransmitter, that neurons use to talk to each other. It helps control things like muscle movement and memory.

Figure 3

Patients with dementia should participate in regular physical and brain activities. Examples include: **(A)** cognitive interventions, in which certain activities promote thinking, concentration, communication, and memory; **(B)** music therapy, which involves using familiar songs to cause patients to feel positive emotions and remember good times; **(C)** exercise and movement, which helps maintain normal brain functioning and improves muscle strength and independence. Different types of therapy can engage different parts of the brain, potentially spark more memories, and help reduce patients' stress.

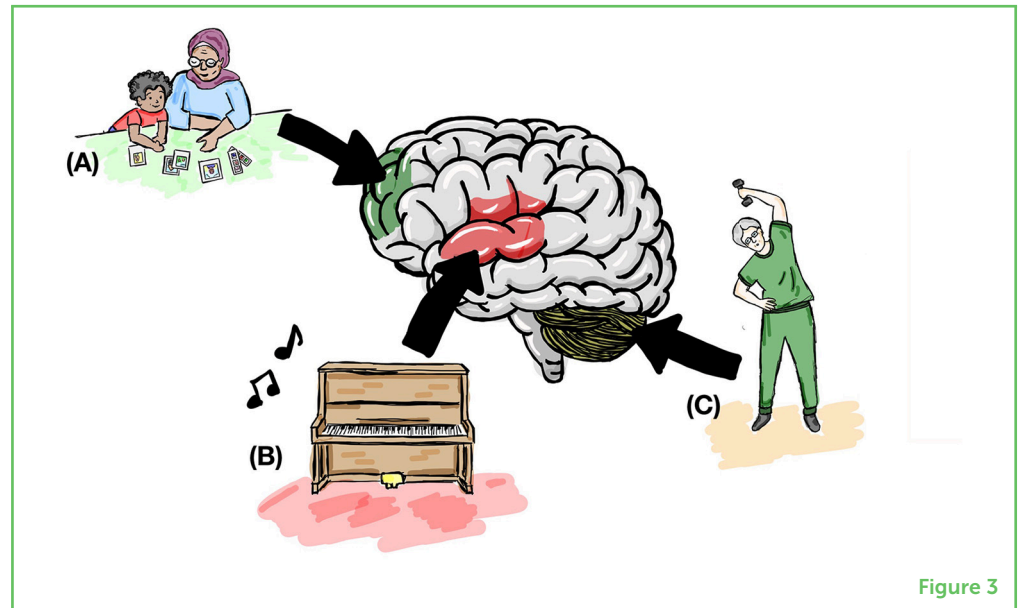


Figure 3

TIPS FOR HELPING SOMEONE WITH DEMENTIA

One important tip to consider when you are trying to communicate with someone with dementia is that it is best to keep things simple. Too many topics or choices at once can be confusing for someone with dementia. Try to stick to one idea at a time. For example, ask them: "Would you like some lemonade?" instead of "Would you like lemonade, ginger ale, or water?". Another tip is to be patient and go slow. Give them lots of time to respond to you—it takes people with dementia longer to process information and come up with a reply.

Finally, people with dementia can undergo personality changes that vary as their symptoms progress. The changes happening in their brains can make them feel nervous and frustrated. Sometimes, they may even get angry at you when you have done nothing wrong. It is important to know that they still love you and do not mean to get angry. Like everyone, people with dementia will have good days and bad days. On these bad days, though we may still want to help our loved one, it is important to always consider personal safety. If someone is getting upset, it usually means they need something but do not necessarily know how to ask for it. In this situation, you can look to a trusted adult for support, offer the person with dementia a drink of water or a snack, and always reassure them that they are safe.

WHAT OTHER HELP IS AVAILABLE FOR PEOPLE WITH DEMENTIA AND THEIR FAMILIES?

Caring for someone with dementia can be challenging. As the disease progresses, the person with dementia needs more and more help taking care of themselves. It usually takes a team of people, including

family members, doctors, nurses, home help, and others, to care for someone with dementia. Some families may hire helpers like nurses or personal support workers, or register their loved one in a day program that can provide them with social activities and food [4].

Taking breaks is important for caregivers' mental health. Additionally, support groups and resources are available to help caregivers cope. Sometimes it can become too much for caregivers to take care of people with dementia at home [5]. When this happens, the person with dementia may move into a facility with 24/7 support. If your loved one moves into one of these homes, try to visit as often as you can. You and your family know the person best and can help make their days brighter by telling stories or doing activities that are meaningful to them. You could also find out how you might be able to volunteer or share something special with the residents, like a music show or artwork!

IN CLOSING...

If you have a loved one with dementia, showing them patience and understanding is really important. Spending time together and keeping them involved in activities they enjoy can make a big difference. Even though dementia does not go away, these efforts can help improve their daily lives and make them feel loved and supported. If things get tough, remember it is not your fault; you are doing your best to help.

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YOUNG REVIEWERS

ANNABELLE, AGE: 9

Bella is a kind, caring, and energetic kid. ADHD is her superpower! She loves playing outside, catching bugs, rescuing animals, and making art out of recycled materials. When she grows up she wants to be a science artist.

LIJIA

I am LiJia, I enjoy learning new things especially in the field of science and mathematics. Participating in math challenges has furthered my problem solving skills and I hope to pursue mathematics at a higher level in the future.

NATASHA, AGE: 15

Natasha is a neurodivergent high school student who enjoys psychology and wants to be an art therapist when she grows up. She enjoys playing video games and D&D, making art, and playing music.



AUTHORS



ANASTASSIA M. MENA

Anastassia Mena is a medical student at the University of Limerick in Ireland. Originally from Toronto, Canada, she completed both her bachelor's and master's degrees in Ontario. Her master's research focused on using images from PET brain scans to help with the differential diagnosis of Parkinson's disease from atypical parkinsonisms. She has always been fascinated with the brain and aging and hopes to explore this further in her career as a physician. Some of her interests include running, playing volleyball, spending time with family and friends, and playing with her adorable puppy named Qmulus (like the clouds)! *23206713@studentmail.ul.ie



FRANCESCA B. SANTOS

Francesca Santos is a medical student at the University of Limerick School of Medicine, in Limerick, Ireland. Originally based in Ontario, Canada, she obtained her bachelor's degree from the University of Waterloo in honors biomedical science. Prior to starting her medical education in Ireland, she worked as a clinical research coordinator at a non-profit research institute specializing in different forms of cardiac care. As an aspiring physician, she is particularly interested in the areas of preventative medicine and health equity. Outside of school and work, Francesca enjoys exercising, reading, traveling, and spending time with family and friends.



LAURA JAMIESON

Laura Jamieson is studying medicine at the University of Limerick in Ireland. Originally from Toronto, she pursued a bachelor's and master's at McMaster University. During her master's in global health, she lived in Australia, the Netherlands, and visited India, learning about healthcare systems and inequalities. Laura applied these lessons to health promotion work in Indigenous communities in Ontario for 5 years. Inspired by these experiences and her close bond with her grandmother, Laura hopes to become a geriatrician. Outside of academics, Laura enjoys singing, sharing a meal with loved ones, reading mystery novels, and cuddling with her basset hound, Phoebe!



MADELEINE P. MCKENZIE

Madeleine McKenzie is a medical student at the University of Limerick in Ireland, from Calgary, Canada. Prior to medical school, she earned two undergraduate degrees in cell and molecular biology and exercise science from Concordia University in Montreal. A dedicated athlete, Madeleine grew up playing competitive soccer and captained the varsity soccer team at Concordia. Her strong interest in pursuing surgery stems from its technical and creative elements, and its immediate impact on patients. In her free time, she enjoys hiking and biking in the Rocky Mountains, traveling, and spending quality time with friends and family.



KEELY MATSUSAKI

Keely Matsusaki is a medical student at the University of Limerick in Ireland. Keely is originally from Chatham, Ontario but completed her undergraduate degree at Dalhousie University in Halifax, Nova Scotia. She earned a bachelor of science in medical science and completed her honors in neuropharmacology. Being from a rural community, Keely has a passion toward rural medicine and is enthusiastic about health equity and education in medicine for these communities. In her free time, you can often find Keely traveling or spending time outdoors, ideally skiing, horseback riding, or surfing with her friends and family.



ANTONIO P. STRAFELLA

Dr. Antonio Strafella is a professor in the Department of Medicine, Division of Neurology and a Senior Scientist at the Krembil Brain Institute at the University Health Network. He is a faculty member of the Institute of Medical Science. He is a movement disorder neurologist in the Edmond J. Safra Program in Parkinson's Disease and Morton & Gloria Shulman Movement Disorders Clinic at the KBI, Toronto Western Hospital.