LINUS HEALTH

Addressing Modifiable Risk Factors for Dementia

Actionable Insights for Providers

Taking action against dementia

Amid growing projections about how many people will face dementia as the global population ages, there's an encouraging counterbalance: a growing body of evidence on the impact of lifestyle and health-related interventions for protecting and improving brain health. While we may not have a cure for dementia yet, interventions targeting modifiable risk factors can not only help prevent or slow cognitive decline, but also offer patients and providers a greater sense of control over brain health.

When it comes to brain health, just like in general health, it pays to be proactive. The first step is to recognize an individual's unique risk factors for dementia and opportunities to address them. From there, it is essential to partner with patients on personalized action plans to support their brain health with effective, timely, and lasting interventions — strategies that will help them keep doing what matters most for as long as possible. This white paper explores some of the latest research and provides practical guidance for providers to help their patients take meaningful steps against dementia.

FEATURED CONTRIBUTOR

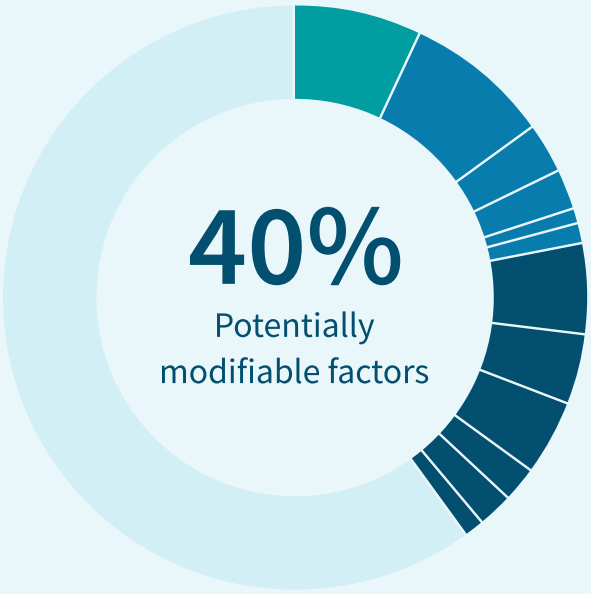
Joyce Gomes-Osman, PhD

Dr. Gomes-Osman is a physical therapist, health coach, and neuroscientist. She has a track record in clinical and translational research that harnesses neuroplasticity through exercise and neuromodulation to promote functional and cognitive improvements in different populations – healthy aging adults to those with neurological and neurodegenerative conditions. She began her career pursuing her physical therapy degree in Brazil, obtained a Ph.D. from University of Miami (UM), and completed a postdoctoral fellowship at Harvard Medical School. Now VP of Clinical Development at Linus Heath, Dr. Gomes-Osman was previously an Assistant Professor in the UM School of Medicine for seven years and maintains a voluntary affiliation there.

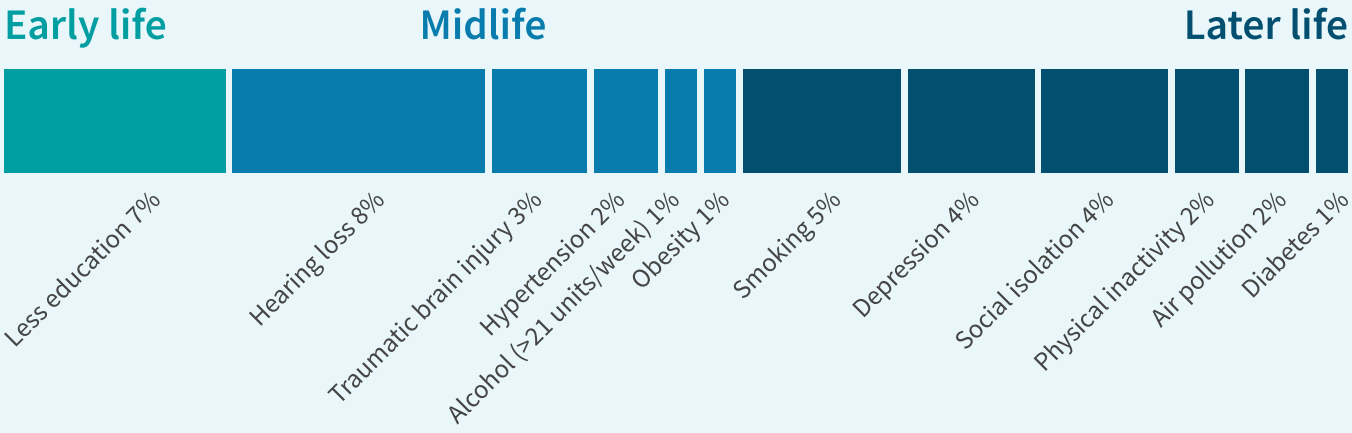
1

Expanding evidence on modifiable risk factors

In 2020, The *Lancet* Commission updated its pivotal 2017 analysis of evidence on dementia prevention, intervention, and care, expanding its original list of nine modifiable risk factors to 12 based on new analyses. The 12 modifiable risk factors account for up to 40% of worldwide dementias, indicating that addressing these factors could theoretically prevent or delay two in five dementia cases.[1]



The *Lancet* Commission's life-course model breaks the modifiable risk factors down into three key stages of life: early life (under 45), mid-life (45-65), and later life (65+). The bulk of these factors come into play in mid and later life, giving older adults significant room to influence their brain health trajectories; of course, the sooner patients can begin adopting healthy habits, the better.



1 EXPANDING EVIDENCE ON MODIFIABLE RISK FACTORS

Some of the **most significant risk factors** identified in the report include:

Hearing loss

A 25-year prospective study of 3,777 people 65+ found a higher dementia incidence in individuals with self-reported hearing problems, but the association was not present in those with hearing aids.[2] The report encourages the use of hearing aids to address existing problems, as well as limiting exposure to excessive noise to protect hearing.

Obesity

Data from 19 longitudinal studies — involving over half a million people 35-65 years old — shows a link between higher BMI and dementia risk in later life. Encouragingly, a meta-analysis of seven randomized controlled trials and 13 longitudinal studies of overweight and obese adults showed improvements in attention and memory from losing weight.

Lack of physical activity

Meta-analyses of longitudinal observational studies (1-21 years) showed an association between exercise and lower risk of dementia. New studies continue to add to the evidence; for example, EXERT trial results shared in 2022 showed that even mild exercise can protect against cognitive decline in people with mild cognitive impairment.[3]

Hypertension

In the Framingham Heart Study's Offspring cohort of 1440 people (mean age 55), elevated systolic blood pressure was tied to a higher risk of dementia over an 18-year period. Risk rose further if hypertension continued from midlife into later life.[3] The report recommends "maintaining systolic BP of 130 mm Hg or less in midlife from around age 40."

Smoking

Data indicates that stopping smoking, even later in life, can reduce dementia risk. For example, a study of 50,000 men age 60+ found that stopping smoking for more than four years cut dementia risk significantly over the following eight years.[4] "Stopping smoking is beneficial regardless of age," per the report. Limiting exposure to second-hand smoke is also beneficial.

Excessive alcohol

One of the three risk factors added in 2020. A 5-year longitudinal study of over 30M people linked alcohol use disorders with higher dementia risk.[5] However, a systematic review of 45 studies involving light to moderate drinking found a *reduced* risk.[6] Thus, the emphasis is on avoiding "alcohol misuse and drinking more than 21 units weekly."

Social isolation

A systematic review and meta-analysis of 51 longitudinal cohort studies involving 100,000+ people showed a link between high social contact and improved cognitive function during later life. While there are varied definitions of "social contact" and limited research on specific interventions, data supports encouraging social engagement.

While the 2020 report provides a comprehensive overview, additional support continues to emerge for these and other modifiable risk factors. For example, recently-published research has provided new data on steps like cutting down on ultra processed foods, getting even mild physical activity, and improving vision.[7] However, it's important to note that patients do not need to follow a laundry list of changes or elaborate programs to support their brain health; much of this data shows that relatively small, feasible changes can have a big impact, as the first FINGER study so powerfully demonstrated.

2

Interventions in action: The FINGER study

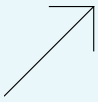
While numerous studies have shown the merits of lifestyle and health-related interventions, some of the strongest support for them in brain health has come from the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER) study.[8] This groundbreaking randomized controlled trial focused on assessing a multidomain approach to preventing cognitive decline in at-risk older adults (60-77 years), ultimately generating powerful validation for lifestyle interventions.

The FINGER study split participants into two groups, each with more than 600 people each: a comparison group that received general health advice and an interventional group that took part in a multidomain intervention program including diet, exercise, cognitive training, and vascular risk monitoring. The FINGER study's approach is significant for several reasons:

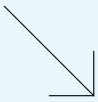
- **It has a prospective, longitudinal nature.** Beyond its initial two-years, the FINGER study included additional five, seven, and 10-year check-in points with participants
- **It looked at interventions *in combination*** as opposed to studying any single intervention alone as in prior studies. This included social contact, as many activities occurred in groups.
- **It focused on people who were already at-risk**, making the results more representative and actionable versus studying people without any existing health issues.
- **The program wasn't complicated or unrealistic.** The intervention group's program was feasible in nature, giving it greater applicability for patient care and staying power in real life.

ACTIVE DIET	PHYSICAL EXERCISE	VASCULAR & METABOLIC MONITORING	SOCIAL ACTIVITY	COGNITIVE TRAINING
Check-ins every couple of months	On most days, 1 hr	Check-ins every couple of months	Many activities were in group	On most days, 3x/week, 10 to 15 min

The results from these small changes over a two-year period were remarkable. Compared to the control group, the interventional group saw:



25% improvement in overall cognitive performance



60% lower risk of developing other chronic diseases

40% improvement in memory performance

83% improvement executive functioning

What's more, the interventional group had a **30% lower risk of developing dementia in the next 7-10 years.** Building on this pivotal work, there is now an expansive global network of World-Wide FINGER clinical trials in place. *See box below.*

So how can the results of this study translate into clinical practice? Creating new habits is by no means easy, regardless of age group. To ensure intervention strategies are impactful and last for the long-term, it is imperative for providers to help their patients curate personalized and practical plans.

GLOBAL FINGERS EXPANSION

After pioneering the first FINGER study, Professor Miia Kivipelto (Karolinska Institute, Stockholm) went on to found the World-Wide FINGERS network in 2017 to facilitate international collaboration in studying the effects of lifestyle intervention on cognitive function. Researchers in 40+ countries are following the core principles of the original study, while tailoring their trials to the specific country, aligning them with local habits, resources, and other cultural factors.

3

Helping interventions stick

Despite a general awareness of the merits of lifestyle and health improvements, many people struggle to make related changes — particularly lasting ones. When it comes to developing plans with patients and helping them make sustained changes, a few key principles that can help include:

Developing a personalized plan

General guidance on healthy habits isn't often effective. To maximize actionability and impact, it's important to ensure patient plans are tailored to their unique goals, risk factors, circumstances, and preferences.

Making the connection to brain health

Tying evidence-based lifestyle changes to brain health can spur action: in Lifebrain's survey of 27,000+ people in 81 countries, 70% said they'd be motivated to make changes if they noticed problems with brain health and 52% if changes were known to be beneficial.[9]

Encouraging specific commitments

Vague assertions like "I'm going to walk more," can be hard to stick to. Instead, encourage patients to craft SMART (specific, measurable, achievable, relevant, timely) goals. For example, "On Tuesdays and Thursdays for the next month, I'm going to walk around the block after dinner."

Pinning new habits to existing ones

We remember to floss because it ties in with brushing our teeth. Attaching a new habit to an existing one makes it easier to remember because it provides a cue. This 'habit stacking' can help patients develop a new routine.

Making it fun, and feasible

Encourage patients to make changes that are realistic to stick with, ones that align with what they enjoy and do in their daily lives. If they don't like running, that's ok; there are many ways to be active — even if it starts with just taking the stairs more often.

Ensuring they have the coaching and support they need

52% of people in the above survey also said they'd be motivated to make lifestyle changes if they received personal advice about what to do (e.g. from their doctor), underscoring the importance of personalized guidance from trusted sources.

Emphasizing progress over perfection

Make sure patients know that set-backs are naturally going to arise, but they don't have to mean complete derailments. Lasting change is hard, but perfection isn't required — the important thing is to not dwell on obstacles and instead focus on getting back on track.

FOSTERING LASTING CHANGES

When it comes to physical activity, research published in *Frontiers* in 2022 focused on fostering adherence found that people were ready to start exercising, but didn't always understand how to keep it going.[10] Three critical ingredients of successful behavior change they lacked were: self-efficacy (likelihood to keep going when faced with an obstacle), self-regulation (troubleshooting obstacles), and social support. In contrast, the highest motivator was personalized advice — general recommendations were a cause of disengagement.

Ultimately, it's about tailoring a plan to the patient and ensuring they have the support to keep going with it. And, in keeping with the insights in the *Lancet* report, helping patients understand that not only can changes they make now yield positive benefits years later, but also that it's never too late to start to improve one's health either.

Putting interventions into practice

When it comes to protecting and improving brain health, we need to keep both expanding the tools in our toolkit and better leveraging the ones we have. Regardless of which and how many drugs exist on the market, lifestyle and health interventions will continue to have an important role to play in helping people maintain and enhance their brain health. And, as with all other aspects of wellness and prevention, the sooner patients can put them into practice, the better.

Talking with patients about brain health and understanding their brain health risks, particularly for those 55+, is a critical first step. From there, whether providers opt to create simple plans on paper or leverage tools to generate them for patients, the key is to ensure patients leave visits informed about their risk factors, motivated to address them, and empowered with an action plan tailored to their needs.

EXPLORE FURTHER

Interested in accessing more resources on brain health interventions? Visit the Linus Health resource center or check out our blog.

REFERENCES

1. Livingston G, Huntley J, Sommerlad A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet* 2020.
2. Amieva H, Ouvrard C, Meillon C, Rullier L, Dartigues JF. Death, depression, disability, and dementia associated with self-reported hearing problems: a 25-year study. *J Gerontol A Biol Sci Med Sci* 2018.
3. Baker L et al. Topline Results of EXERT: Can Exercise Slow Cognitive Decline in MCI? AAIC Conference Abstract, 2022.
4. Li J, Ogrodnik M, Kolachalama VB, Lin H, Au R. Assessment of the mid-life demographic and lifestyle risk factors of dementia using data from the framingham heart study offspring cohort. *J Alzheimers Dis* 2018.
5. Choi D, Choi S, Park SM. Effect of smoking cessation on the risk of dementia: a longitudinal study. *Ann Clin Transl Neurol* 2018.
6. Schwarzinger M, Pollock BG, Hasan OSM et al. Contribution of alcohol use disorders to the burden of dementia in France 2008–13: a nationwide retrospective cohort study. *Lancet Public Health* 2018.
7. Ilomaki J, Jokanovic N, Tan ECK, Lonnroos E. Alcohol consumption, dementia, and cognitive decline: an overview of systematic reviews. *Curr Clin Pharmacol* 2015.
8. Linus Health Blog, Recent research on dementia prevention: 3 takeaways for daily life, November 1, 2022.
9. Ngandu T et al. A 2 year multidomain intervention of diet, exercise, cognitive training, and vascular risk monitoring versus control to prevent cognitive decline in at-risk elderly people (FINGER): a randomised controlled trial. *Lancet* 2015.
10. Lifebrain. What motivates people to look after their brain health? Insights from the Global Brain Health Survey. 2022.
11. Cabral D, Santos V, Silva M et al. Recommending Physical Activity to Your Aging Patients? What Clinicians Need to Know to Increase Adherence From the Older Adult Perspective. *Front. Rehabilit. Sci.* 2022.