Non drug treatments to intervene and prevent dementia

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- Holistic prevention
- Multimodal interventions
- Evidence for non-drug treatments

Lancaster Town Hall
26th Oct 2017
Photos by Christine Derrick
Non-drug Treatments to Intervene and Prevent Dementia

- Social Interaction
- Reducing stress and blood pressure
- Brain Training (Cognitive Stimulation)
- Antioxidants, Vitamins D, B6, B12, Folic Acid, Quit smoking
- Genetics (something you maybe can't change...?)

DIET - Broccoli, Spinach, Beetroot, Berries, Green Tea, Cocoa, Coffee, Salmon, Red Wine...

Singing, Music and Dancing

Walking, Aerobic Exercise, Gardening, Resistance Training

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• The effect of retirement on cognitive functioning occurs with a delay of about one year post retirement. Cognitive scores in the elderly are better for countries in which the retirement age is higher. In other words, retirement negatively impacts cognitive functioning.
• Cognitive aging is delayed by continuing to work and by undertaking regular charity or voluntary work.
• All types of occupational activity have a positive effect on cognitive functioning, while mobility limitations and living alone had a negative association with cognition.
• The strongest positive association was observed for attending an educational or training course.

Non-drug Treatments to Intervene and Prevent Dementia

Good for brain health

Every time you eat or drink, you are either feeding disease or fighting it!
Polyphenol antioxidants such as resveratrol reduce your risk for AD

Dark leafy greens & Colourful vegetables

Only dark chocolate

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Avoid SUGAR and Artificial Sweeteners

August 2013, New England Journal of Medicine “even subtle elevations of fasting blood sugar translates to dramatically increased risk for dementia.”

Limit simple carbohydrates. Avoid gluten.

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The Natural World for Dementia Prevention

Physical activity & Exercise
- Strength, balance, agility, cardiovascular health & stress relief
- Connection to Nature & Sensory stimulation

Cognitive stimulation & Occupation
- Re-skilling & neuroplasticity

Fresh air & Sunshine
- Better sleep & heartier appetite

Grow your own food & Healthy eating
- Improved diet, nutrition & awareness

Social interaction
- Identity, relationship & personhood

Non-drug Treatments to Intervene and Prevent Dementia
- Animals & Art

Nature and Outdoors
- Fresh air & Sunshine
- Grow your own food & Healthy eating
- Social interaction
- Non-drug Treatments to Intervene and Prevent Dementia

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Physical Activity and Exercise

Lowers blood pressure; pumps oxygen and nutrients to the brain; improves sleep, mood, memory, appetite, strength and balance; combats frailty, cardiovascular disease; delays onset.

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Aerobic exercise, card games, cooking, outdoors activity and diary: stress relief, making a product, enjoyment, delight, expectation, following a plan and having an achievement.
Plant finding exercise in Dementia Prevention Class
Nishino Hospital, Kitakyushu, Japan

Planting seedlings
www.furate.net

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Enjoyable activities outside prevent loneliness and depression which can both lead to dementia.

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Exposure to nature gardens has time-dependent associations with mood improvements for people with mid- and late-stage dementia: Innovative practice

Piran CL White and Jonathan Wyatt
Environment Department, University of York, York, UK

Garuth Chalfont
Lancaster University, Lancaster, UK

J Martin Bland
Department of Health Sciences, University of York, York, UK

Christopher Neale
Environment Department, University of York, York, UK

Dominic Trepel and Hilary Graham
Department of Health Sciences, University of York, York, UK

Abstract
Exposure to green space and nature has a potential role to play in the care of people with dementia, with possible benefits including improved mood and slower disease progression. In this observational study at a dementia care facility in the UK, we used care-assessed measures to evaluate change in mood of residents with mid- to late-stage dementia following exposure to a nature garden. We found that exposure to nature was associated with a beneficial change in patient mood. There was a non-linear relationship between time spent outdoors and mood outcome. Improvements in patient mood were associated with relatively short duration...
Cognitive Stimulation (brain training)

Improves memory and reasoning

Improves behaviour
Reduces depression

Healthy Living through the Mind

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DEMENTIA PREVENTION THROUGH HOLISTIC LIVING

DRAW FROM THE EVIDENCE

IMPROVE DIET & NUTRITION
- Eat more Herbs & Spices, Good Fats & Omega 3’s.
- Antioxidants, Nutrients, Healthy Gut & Less Inflammation.

INCREASE EXERCISE & MOVEMENT
- Swim, Cycle, Sprint & Walk. Try Aerobics, Gardening, Strength Training, Badminton & Ping-Pong.
- Strength, Balance, Agility, Brain-derived Neurotrophic Factor (BDNF) & Cerebral Blood Flow (CBF).

GET GOOD SLEEP
- Get Outdoors Daily, Improve Sleep Hygiene & Unplug.
- Daylight, Fresh Air, Vitamin D, Normalise Sleep-wake Cycle.

REDUCE STRESS & ANXIETY
- Forest Bathing; Pets & Wildlife; Tai chi, Yoga, Meditation, Deep Breathing, Reiki, Sauna & Massage.
- Nature-relatedness & Relaxation; Energy Balance, Oxygenation & Increased Serotonin; Peace & Gratitude.

STAY SOCIALY ACTIVE
- Try Social Dancing, Community Gardening & Intergenerational, Multicultural Activities.
- Meaning, Acceptance, Belonging, Communication, Confidence, Empathy & Friendship.

CHALLENGE YOUR BRAIN
- Stimulate Cognition; Improve Memory; Grow Brain Cells; Build Cognitive Reserve, Maintain Life Skills & Function.

Useful Resource Links: 1 2 3 4 5 6 7
PROSPERO International prospective register of systematic reviews

A mixed methods systematic review of multimodal non-pharmacological interventions to improve cognition for people with dementia: protocol
Garuth Chalfont, Christine Milligan, Jane Simpson

Citation

Review question(s)
In adults with a primary diagnosis of dementia, what is the evidence for the effectiveness of multimodal (i.e. complex, more than one mode) non-pharmacological interventions for improving cognitive functioning?

Secondary questions:

• What is the evidence for what works and does not work?

• What is the evidence for different groups of people with dementia (early, mid or late stage) and potentially for different types (Alzheimer’s, vascular, etc.)?

• What are the strengths and limitations of different study designs used in testing these outcomes?

• What are the strengths and limitations of different evaluation tools used to assess the effectiveness of non-pharmacological interventions?
Multimodal Research References


Reversal of Cognitive Decline: A novel therapeutic program

Dale E. Bredesen - Aging, Sept. 2014, Vol 6 No 9

36 Metabolic Factors

INTERVENTION
• Comprehensive, personalized program to enhance the metabolism with multiple modalities to achieve Metabolic Enhancement for Neurodegeneration (MEND)

• Patients had memory loss associated with AD or cognitive impairment

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USA

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Why Memory Loss?

Example:
- Patient with the initials KU
- 65 years old
- ApoE4-positive

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<table>
<thead>
<tr>
<th>Association</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ApoE4?</td>
<td>Yes (4/3)</td>
</tr>
<tr>
<td>Heterozygote?</td>
<td></td>
</tr>
<tr>
<td>Homozygote?</td>
<td></td>
</tr>
<tr>
<td>Homocysteine &gt;7?</td>
<td>Yes (15.1)</td>
</tr>
<tr>
<td>Vitamin B12 &lt; 500?</td>
<td>Yes (328)</td>
</tr>
<tr>
<td>CRP &gt; 1.0?</td>
<td>Yes (9.9)</td>
</tr>
<tr>
<td>A/G ratio &lt; 1.8?</td>
<td>Yes (1.6)</td>
</tr>
<tr>
<td>HgbA1c &gt; 5.6?</td>
<td>HgbA1c 5.5</td>
</tr>
<tr>
<td>Fasting insulin &gt; 6 uIU?</td>
<td>Insulin 32</td>
</tr>
<tr>
<td>GTT insulin?</td>
<td></td>
</tr>
<tr>
<td>Simple CHO in diet?</td>
<td>Yes</td>
</tr>
<tr>
<td>FBS &gt; 90?</td>
<td>Yes (96)</td>
</tr>
<tr>
<td>Thyroid: TSH &gt; 2.0?</td>
<td>Yes (2.21)</td>
</tr>
<tr>
<td>Free T3 &lt; 3.2? RT3 &gt; 20?</td>
<td>Yes (2.4)</td>
</tr>
<tr>
<td>Free T4 &lt; 1.3?</td>
<td>Yes (0.8)</td>
</tr>
<tr>
<td>Sleep apnea/hypopnea?</td>
<td>No</td>
</tr>
<tr>
<td>Low androgen? Total T &lt; 500? Free T &lt; 6.5?</td>
<td>Yes (264) Yes (41, 4.1)</td>
</tr>
<tr>
<td>Low estradiol? Post-menopausal?</td>
<td>NA</td>
</tr>
<tr>
<td>E2&lt;100? E2:P &gt;300?</td>
<td></td>
</tr>
<tr>
<td>Hysterectomy at &lt;41 y.o.?</td>
<td></td>
</tr>
<tr>
<td>Low pregnenolone? &lt;20?</td>
<td>Pd.</td>
</tr>
<tr>
<td>Vitamin D &lt; 30?</td>
<td>Yes (21)</td>
</tr>
<tr>
<td>History of head trauma? LOC?</td>
<td>No</td>
</tr>
<tr>
<td>Diabetes?</td>
<td>No, but insulin resistant</td>
</tr>
<tr>
<td>Neuroactive medications? Which?</td>
<td>No</td>
</tr>
<tr>
<td>History of illicit drug use?</td>
<td>No</td>
</tr>
<tr>
<td>Metabolic syndrome?</td>
<td>Yes (TG, BP, glu, insulin)</td>
</tr>
<tr>
<td>Cholesterol &gt; 225? &lt; 150?</td>
<td>Yes</td>
</tr>
<tr>
<td>Abnormal HDL:LDL ratio?</td>
<td>Yes</td>
</tr>
<tr>
<td>Post-menopausal?</td>
<td>NA</td>
</tr>
</tbody>
</table>
Reversal of Cognitive Decline in Alzheimer’s disease

Dale E. Bredesen - Aging, June 2016, Vol 8 No 6

RESULTS

• 9 out of 10 patients improved beginning within 3 months
• 6 of the patients who had stopped working or were struggling at work have gone back to work or are continuing without difficulty

• Improvements have been sustained
• Longest follow-up is 2.5 years

“Here we report the results from quantitative MRI and neuropsychological testing in ten patients with cognitive decline, nine ApoE4+ (five homozygous and four heterozygous) and one ApoE4-, who were treated with the MEND protocol for 5-24 months. The magnitude of the improvement is unprecedented, providing additional objective evidence that this programmatic approach to cognitive decline is highly effective. These results have far-reaching implications for the treatment of Alzheimer’s disease, MCI, and SCI; for personalized programs that may enhance pharmaceutical efficacy; and for personal identification of ApoE genotype.”

Non-drug Treatments to Intervene and Prevent Dementia

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Non-drug Treatments to Intervene and Prevent Dementia

- Acupuncture and herbal medicine (Zhou 2017)
- Mind-body therapies (Anderson 2017)
- Language-enriched exercise (La Rue 2013)
- Acupuncture and inhalation of herbal drugs and oxygen (Jian 1999)
- Nutritional Supplementation and a Psychomotor Program (de Sousa 2017)
- Cognitive stimulation, exercise, music, art and horticultural therapy (Kang 2010)
- Physical activity, cognitive stimulation and socialisation (Maci 2012)
- Therapeutic program = sleep, stress, exercise, brain stimulation, vitamins, supplements, diet, hormones, GI health, fasting, herbs, antioxidants (Bredesen 2016)
- Physiotherapy, occupational therapy and physical education (Christofoletti 2008)
- Integrated Psychostimulation Program (Ibarria 2016)
- Rejuvenative treatment (Prokopov 2010)
- Repetitive transcranial magnetic stimulation with cognitive training (Lee 2016)
- Anodal tDCS during individualised computerised memory training (Cotelli 2014)

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A multidisciplinary rehabilitation program on cognition, quality of life, and neuropsychiatry symptoms in patients with mild Alzheimer's disease. A controlled study of 25 Alzheimer's patients and their caregivers and involved a 12-week stimulation and psychoeducational program. Group sessions included memory training, computer-assisted cognitive stimulation, expressive activities (painting, verbal expression, writing), physiotherapy, and physical training. Treatment was administered twice a week during 6.5-h gatherings.

**Results:** Measurements of global cognitive function and performance on attention tasks indicated that patients in the experimental group remained stable, whereas controls displayed mild but significant worsening. The intervention was associated with reduced depression symptoms for patients and caregivers and decreased neuropsychiatric symptoms in Alzheimer's subjects. The treatment was also beneficial for the patients' quality of life. Structured nonpharmacological interventions can yield adjunct and clinically relevant benefits in dementia treatment.

A female patient born in 1931 suffered mental decline for about 1 year. She could no longer conduct her usual activities and home chores and could not hear without a hearing aid. Brain magnetic resonance imaging (MRI) performed in February, 2008, revealed degenerative changes. Treatment consisted of repeated sessions of intermittent hypoxic training (IHT), and individualized vitamins, amino acids, microelements, supplementation, and nutritional adjustment. Until April, 2009, the patient had completed four cycles of IHT and 8 months of the supplementation program. The patient gradually recovered her healthy mental state; she resumed shopping and cooking and began playing piano again, which she was not capable of doing last year. An MRI of her brain performed during April, 2009, showed no degenerative changes.

Non-drug Ways To Brain Health
Body, Mind and Soul

1. Nutrition
2. Physical Activity
3. Socialising
4. Mental Stimulation
5. Sleep
6. Mind-body
7. Emotion

Preventing Disease with Lifestyle

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Design, Research and Community Engagement

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...and Dementia Prevention!

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Facebook – Dementia Beat Camp