

Mental health promotion for seniors

Sir Winston Churchill sums up why we should promote cognitive health throughout life: “Healthy citizens are the greatest asset any country can have.”

ABSTRACT: Promoting mental health protective practices is especially important given that longevity is not a baby boom phenomenon and extended life spans are here to stay. Current disease-specific treatment models for degenerative brain disorders are dysfunctional. We should not be treating end-stage brain diseases ad infinitum just because we can. Instead we should be overcoming ageism—a major obstacle to mental health promotion for seniors—and encouraging practices that protect brain health and enhance cognitive function. Healthy heart programs abound because they are effective; brain health programs can be just as effective. The most promising strategies for preventing dementia include vascular risk factor control, cognitive activity, physical activity, social engagement, healthy diet, and recognition of depression. Mental health protective practices need to be promoted in the same way we promote other healthy practices to both young and old populations. If we fail to do this, we will continue to incur spiraling costs and we will not benefit from the longevity dividend—the economic and social contributions that healthy seniors make to society.

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In the early 1900s “geriatrics” was a new word. Today geriatric psychiatry is a recognized subspecialty informed by substantial knowledge of human physiology. Medical science, particularly preventive medicine, has contributed dramatically to the great swell of elderly populations—and programs aimed at preventing heart disease, diabetes, alcoholism, and other diseases have proven that health promotion is effective. Astoundingly, brain disease prevention has been neglected and the brain remains the weakest link in organ repair and replacement. We are discovering that disease-specific models fail to make substantial impacts on degenerative brain diseases. We know more about treatment than prevention and fail to apply even what we do know about prevention.

In the US in 2009 there were 5.3 million people with Alzheimer disease (AD), and a new case developed every 70 seconds; by mid-century, someone will develop AD (70% of dementias) every 33 seconds.¹ Closer to home, the Rising Tide study by the Alzheimer Society considers the present and future impact of dementia in Canada and BC (2008–2038).^{2,3} The findings are sobering: in 2008 there were 15 150 new cases of dementia, with the number of new cases expected to exceed 35 720 by 2038. In 2008 dementia

affected 1.6% of the BC population (68 910 cases), and is expected to affect 3% of the population (177 684 cases) by 2038. The number of hours of unpaid care for BC dementia patients provided annually by families in 2008 was 33.1 million; by 2038 this is expected to rise to 118.8 million hours. The economic consequences of dementia are staggering. The sum of direct, indirect, and opportunity costs to informal caregivers in 2008 was \$2.1 billion; by 2038 this is expected to reach \$130.2 billion (2008 dollars).²

Obstacles to prevention

Psychiatrists recognize the importance of diagnosis and early treatment to prevent full-blown disease expression, so why are we not trying to prevent psychiatric disorders of old age? Ageism plays a role, and always has, as shown by an editorial in the *Canadian Medical Association Journal* from 1914:

For the old the young have little sympathy. They may pretend to suffer with them, but in reality they do not. Real sympathy would only

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increase the sum of suffering; and the young, with the egotism of youth, have an unconquerable aversion from destroying their own happiness by making themselves sharers in the misery they cannot alleviate. For the aged to demand such a sacrifice is in turn a manifestation of the egotism of the old. There is no spectacle more pathetic than a young life sacrificed to the tyranny of kith and kin, and it is the more pathetic when youth is yielded ungrudgingly. Two lives are destroyed instead of one. Such is the law in all Western communities. It is the incentive of all labor, lest a man be cast in his old age upon the mercy of his own.⁴

Even if we are better informed scientifically today, our attitudes have probably not changed much since 1914. The politicians who control health care dollars generally avoid advocating for those who seem economically worthless, and the elderly are reluctant to lobby for themselves. There are psychological factors as well: seeing seniors, particularly those who are ill, threatens our own defenses against anxieties about aging, illness, and death.

Physicians are expected to preserve and prolong life. Thus, the social and psychological dynamics of physicianhood are in conflict to some extent and can prevent focusing on quality of life.

Arrival of preventive psychiatry

Health promotion concepts published in the first edition of *Health Promotion International* (1986) launched the Ottawa Charter for Health Promotion.⁵ Ironically, many countries heed the Ottawa Charter more earnestly than Canada. “Salutogenesis” (Antonovsky’s term; see “Suggested reading”) focuses on determinants of well-

being, rather than disease; salutogenic models explore relationships between stress, coping, and health. Mental health promotion (MHP) for seniors is a salutogenic process that strives for flow, coherence, cohesion, meaningfulness, self-confidence, integrality, and physical health. Most recently at the Galway Consensus Conference (Ireland, June 2008), an international collaboration advanced consensus statements for effective health promotion.⁶

After decades of research, preventive psychiatry has arrived; methodology and strategic plans have been articulated.⁷ Understandably, research to prevent psychiatric illness started with children because of the importance of early development. The situation for seniors is different because although some anxiety and depressive syndromes are related to life stage, most geriatric mental illnesses are neurodegenerative disorders. Unfortunately, treatments of the latter address symptoms only or are non-existent. Furthermore, treatments are difficult because of drug side effects, treatment resistance, and rising costs.

Historically, psychiatry has ignored prevention. However, recent articles, studies, and conferences have focused on MHP for seniors. The 14th Congress of the International Psychogeriatric Association was titled Path to Prevention, and a chapter on prevention principles for older adults appears in Compton’s 2010 *Clinical Manual of Prevention in Mental Health*.⁸

Nongenetic risk factors

The developing brain is malleable, a fact that has led to pilot project attempts at preventing mental illness by increasing health literacy in the young, including in BC.⁹ What about the aged? Do older brains respond to health promoting practices? Before

the discovery of neurogenesis (the formation of new brain cells), the MacArthur Foundation study, Successful Aging, showed that lifestyle more than heredity determined health for the majority. Subsequently, a land-

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mark study discovered neurogenesis, particularly in the hippocampal formations, even in old brains.¹⁰ Furthermore, studies including brain imaging have demonstrated neuroplasticity—physiological and anatomical changes in response to experience. Such findings have revolutionized our thinking about brainpower. We now know that at any age the brain revises its processing machinery, which can have positive or negative effects on performance and well-being. Gray matter can thicken, trunks can remyelinate, new connections can sprout, unused pathways can revitalize. Thus, brain and cognitive reserve develop. Impressively, even after 2 weeks of healthy lifestyle programming, functional improvements have been demonstrated by neuropsychological testing and brain imaging.¹¹

Aging is the most important risk factor for dementia. Incidence nearly doubles every 5 years after 65 and increases exponentially with each ad-

ditional independent risk factor (rule of 2).¹² Genetic and nongenetic (environmental and experiential) risk factors have been elucidated.¹³ Genetic (ApoE) status is unalterable, but twin studies suggest there are modifiable lifestyle risk factors.¹⁴ Convergent animal, human performance, and imaging studies show that brain chemistry and structure are modified by environmental and experiential factors.

Age-related decline is physiological and exists even in those who have not succumbed to pathology.

It is now accepted that providing programming improves brain function and health. Building brain reserve boosts quality of life, not merely longevity. Healthy aging leads not only to longer life span but also longer “health span.” The increase in productive years and less protracted frailty at the end of life translates into reduced suffering and lower health care costs. Population, laboratory, and clinical studies highlight several lifestyle behaviors that delay degenerative brain disease. The most promising strategies for preventing dementia include vascular risk factor control, cognitive activity, physical activity,

social engagement, healthy diet, and recognition of depression.¹⁵ Promising programmable strategies for brain health are advocated by physicians who have reviewed scientific literature and explored various methodologies.¹⁶⁻¹⁸

Brain health promotion activities

Age-related decline is physiological and exists even in those who have not succumbed to pathology. It begins in the 30s and accelerates after age 50. Age-related memory impairment affects about 40% of people 65 years or older.¹⁹ It is a cumulative result of disuse,^{20,21} faulty processing due to deterioration of sensory inputs,²² decline in production of brain chemicals, and negative learning. Thus, combating causes of age-related cognitive decline involves scientifically validated brain fitness programs that discourage disuse, help clear fuzzy input (auditory, visual, etc.),²³ improve neurotransmitter signaling,²⁴ and guide participants out of maladaptive compensatory behaviors.²⁵

The following brain health promoting activities are from the Healthy Brain Program, which made its debut in BC in 2000²⁶ and was subsequently described in the *Canadian Journal of CME* and reviewed in this journal.^{27,16}

Safety

Traumatic brain injury clusters in young males and elderly populations. Seniors are at high risk for concussion caused by falls and motor vehicle accidents. Concussion is an independent risk factor for dementia and the risk is higher in Alzheimer gene carriers. Prevention is the only way to avoid the consequences.

Proper nutrition

Overweight and obesity are lifestyle-related problems. Clinical obesity is

an independent risk factor for dementia and it increases risks for a number of other diseases that are also independent risk factors for dementia. Eating a healthy diet rich in fish, vegetables, and fruit (Mediterranean diet) and avoiding animal fats and processed foods is associated with lower rates of dementia. Caloric restriction, short of vitamin deficiency, is associated with cognitive health. During normal, age-associated negative protein balance (age-associated anabolic decline) accumulation of body fat should be avoided.

Physical fitness

Exercise has a positive impact on cardiovascular risk; increased cerebral blood flow promotes brain cell growth. Animal and human studies overwhelmingly indicate that fitness confers protection against cardiovascular and cerebrovascular disease.

Cognitive fitness

Research has confirmed the accuracy of the “use it or lose it” maxim. Animal and human studies support the conclusion that mental stimulation, novel activity, and cognitive training improve memory performance and offer protection against decline. Systematic review supports the conclusion that cognitive exercise training in healthy seniors produces strong and persistent protective effects on longitudinal neuropsychological performance. Cognitive activity compensates for education disparity in cognitive aging, and there are real-life survival benefits that support making practical learning opportunities part of MHP for seniors.

Restorative sleep

Sleep disturbances and sleep debt are common in the elderly. Chronic sleep debt is deleterious to cognitive functioning and paves the way to psychi-

atric disorders. Promoting sleep hygiene is the easiest and safest way to improve brain function. Optimal sleep improves stress response, hormonal balance, immune response, energy, and mood.

Healthy response to stressors

Stress levels of cortisol, whether of endogenous or exogenous origins, cause cognitive impairment in the elderly. Long-term hypothalamic pituitary-adrenal (HPA) axis hyperactivity and resultant chronic hypercortisolemia are toxic to brain regions associated with learning and recall (hippocampus). Exposure to spousal suffering is an independent and unique source of distress in married couples that contributes to psychiatric and physical morbidity. Acute and chronic stressors have different effects depending on severity and duration. There are also host factors; distressed or cognitively impaired older adults show a faster decline in memory functions than healthy counterparts. Stressors cannot be avoided but positive stress response behaviors can be learned by young and old.

Endocrine health

Promotion of endocrine health attempts to address ubiquitous age-related anabolic and neuroendocrine decline. Endocrine balance is strongly supported by healthy exercise and sleep habits. Hormone replacement therapies (HRT) promoted in the marketplace for antiaging purposes are to be avoided because of the clear dangers they pose: unnecessary and unopposed estrogen replacement, non-medical growth hormone replacement, and unmonitored androgen use. Emphasis should be on education to strive for “hormone harmony” and avoidance of “hormone hazards.” However, there is continuing support for brain benefits of anabolic HRT, for both

men and women. Androgen and estrogen deficiency subsyndromes not clearly defined as diseases respond to HRT.

Calciferol (vitamin D) is a hormone that is released by the skin. Acting on the nucleus of every cell, vitamin D exerts marked effects on immune and neural cells, modulates brain cell growth factors, reduces inflammatory activity, and influences differentiation and survival of brain cells. Not surprisingly, vitamin D has been a strong candidate in the search for risk-modifying factors for multiple sclerosis, Parkinson disease, epilepsy, depression, and immune-mediated disorders.

Early diagnosis and treatment of risk factors for dementia

The following are independent, exponentially compounding risk factors for cognitive impairment or early-onset dementia:

- Alcoholism, substance abuse, smoking.
- Blood pressure disorders: hypertension, chronic hypotension.
- Coagulopathies.
- Dyslipidemia.
- Endocrinopathies: type 2 diabetes, obesity, metabolic syndrome, hypothyroidism, hypercortisolemia.
- Inflammatory conditions: periodontitis, autoimmune disorders, depression.
- Malnutrition (dietary deficiencies and malabsorption): cobalmin, folate, iron.
- Poisoning: mercury, lead, insecticides.
- Psychopathology: anxiety, stress, depression, psychosis.
- Vascular disease: atherosclerosis and ischemia—peripheral, cardiac, cerebral.

The above are often comorbid and may cause mild cognitive impairment (MCI), defined in 2003 as a syndrome more severe than age-related decline.

MCI is a high-risk state for dementia, having a yearly conversion rate of 15%. Treating antecedents and applying anti-dementia therapies have been explored and efficacies evaluated.²⁸

It is important to emphasize that the above conditions are easily diagnosed and can be treated by the family practitioner. In order to delay the expression of cognitive disability, early diagnosis and proactive treatment (often of several comorbidities) are indicated. Last but not least, pharmacotherapy used for psychiatric disorders must avoid iatrogenesis.²⁹

Summary

Overall, an extended healthy life for seniors provides health, economic, and social benefits collectively referred to by Butler as the “longevity dividend.”³⁰ Now that we know disease-specific models of treatment yield diminishing returns on our efforts and health care dollars, priority should be given in our aging societies to mental health promotion and prevention of disease. Effective brain health programs include proper nutrition, physical fitness, cognitive fitness, and a focus on early diagnosis and treatment of risk factors for dementia.

Among the most noteworthy and germane discoveries in the neurosciences over the past two decades is the surprising capacity of aging human brains to draw on cognitive reserves and to maintain plasticity. “Positive mental aging,” “successful aging,” “resilience,” and “brain health” appear frequently in medical journals and media. Longevity is not a temporary baby boom phenomenon—extended life spans are here to stay. As society becomes more knowledge-based, cognitive health throughout life will become an increasingly important determinant of well-being—and survival.

Competing interests

None declared.

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