

Mental Wellness in Asia

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MENTAL WELLNESS

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“There is no health without mental health.” – World Health Organization

The aim of this section is to focus on individual and community approaches that reduce the burden of mental illness by promoting the adoption of evidence-based pathways which are culturally familiar within Asia and can prevent stress, reduce depression and anxiety, and promote mental wellbeing throughout the life span. The section will present new directions for improving mental wellness across Asia in accordance with the principles of de-institutionalization, patient-centered care, personal responsibility for mental and physical health, community support systems, and evidence as the basis for strengthening the widespread adoption of culturally familiar pathways to mental wellness.

Mental Health: Global Trends

In 2017, the World Health Organization (WHO) produced the WHO Mental Health Atlas with data from questionnaires completed by 177 of WHO's 194 member states (WHO 2018), and used to monitor the development and implementation of WHO's Mental Health Action Plan 2013–2020.

The WHO atlas reported that the level of public expenditure on mental health in low-income and middle-income countries was meagre, and more than 80% of funds went to mental hospitals. The allocation for human resources for mental health services has extreme variation between low-income and high-income countries (1 in low-income countries to 72 in high-income countries), while globally, the median number of mental health workers is 9 per 100,000 population (WHO 2018). The number of mental health beds per 100,000 population is less than 8 in low and lower middle-income countries but over 50 in high-income countries (WHO 2018). In the sector of mental health promotion and prevention, only 63% of WHO member states have a minimum of two functioning multisectoral mental health promotion and prevention programs at a national level, even though 72% of member states have a dedicated policy or plan for mental health and 57% have a stand-alone mental health law (WHO 2018).

The WHO has taken the position that mental health leads to mental and psychological wellbeing. With mental health given its due importance in the United Nations Sustainable Development Goals, for the first time, leaders of the world have acknowledged that mental health promotion and wellbeing and the prevention and treatment of substance abuse are

likely to have a positive impact on communities and countries where millions of people require much-needed help. The focus on ensuring healthy lives and promoting wellbeing for everyone and for at all ages lies in Goal 3 of the 17 Sustainable Development Goals. Goal 3, Target 3.4 calls on countries to reduce premature mortality from noncommunicable diseases by a third, through prevention, treatment, and mental health and wellbeing promotion. Target 3.5 calls on governments to reinforce and increase efforts in the prevention and treatment of substance abuse, including narcotic drug abuse and the use of alcohol at harmful levels.

In 2007, *The Lancet* consolidated decades of interdisciplinary studies and practice in a multitude of contexts and raised a call to action to stakeholders globally to “scale up services for people affected by mental disorders (including substance use disorders, self-harm, and dementia)” (Patel et al. 2018, p. 1553). The call to improve mental health services included a focus on disadvantaged communities living in low-income and middle-income countries, where rights to care and dignity left much room for improvement.

In a Global Burden of Disease Study on the global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017, three chronic NCDs (low back pain, headache disorders, and depressive disorders) prevailed as three of the top four leading causes of years lost to disability (YLDs), collectively causing 162 million YLDs in 2017 and representing nearly one in five YLDs globally (James et al. 2018, p. 1795). “Between 1990 and 2007, the number of all-age YLDs attributed to depressive disorders increased by 33.4% (31.0%–35.8%), becoming the third leading cause of all-age YLDs in 2007, and shifting dietary iron deficiency to fourth”. The authors of the study noted that the persistence of depressive disorders is concerning, given their relation with self-harm.

Ten years on, The Lancet Commission on global mental health and sustainable development (2018) reported that: “Despite substantial research advances showing what can be done to prevent and treat mental disorders and to promote mental health, translation into real-world effects has been painfully slow. The global burden of disease attributable to mental disorders has risen in all countries in the context of major demographic, environmental, and sociopolitical transitions” (Patel et al. 2018, p.1553).

The Lancet Commission has called for (i) a broadening of the global mental health agenda from a focus on reducing the treatment gap for people affected by mental disorders to improving mental health for whole populations, and (ii) reducing the contribution of mental disorders to the global burden of disease.

The Lancet Commission went on to reframe the global mental health agenda around four pillars:

- (i) First, mental health is a global public good and is relevant to sustainable development in all countries, regardless of their socioeconomic status, because all countries can be thought of as developing countries in the context of mental health.
- (ii) Second, mental health problems exist along a continuum from mild, time-limited distress to chronic, progressive, and severely disabling conditions. The binary approach to diagnosing mental disorders, although useful for clinical practice, does not accurately reflect the diversity and complexity of mental health needs of individuals or populations.
- (iii) Third, the mental health of each individual is the unique product of social and environmental influences, in particular during the early life course, interacting with genetic, neurodevelopmental, and psychological processes and affecting biological pathways in the brain.
- (iv) Fourth, mental health is a fundamental human right for all people that requires a rights-based approach to protect the welfare of people with mental disorders and those at risk of poor mental health, and to enable an environment that promotes mental health for all.

A Life Span Approach to Understanding Mental Health

The WHO has taken a life span approach to understanding the risk factors and influencers on mental health and noted that these vary significantly for an individual as they move through the life-course. The following are the risk factors for a given stage of life identified by the WHO:

Preconception and prenatal period

A given individual's mental health and wellbeing can be influenced by factors present prior to conception or birth, including maternal tobacco, alcohol and drug use, malnutrition, low-birth weight, and micronutrient deficiency (for example, iodine deficiency).

Infancy and early childhood

Emotional attachment in early childhood has a considerable impact on later vulnerability to mental health and wellbeing.⁸ As a result, particular risk factors include separation from the primary caregiver, in some cases post-natal depression in mothers (which can result in sub-optimal attachment), and parents for whom communication and social interaction is challenging. Child maltreatment and neglect has been found to have a significant impact on

vulnerabilities to mental wellbeing.⁹ Malnutrition, poor access to basic services, and disease and parasites are also important contributors.

Childhood

Childhood conditions form a critical component of health and wellbeing later in life. Negative experiences, either at home or outside of the home (for example, bullying in school) can have lifelong impacts on the development of core cognitive and emotional skills. Poor socioeconomic conditions also have a significant effect on vulnerability to mental health disorders. Children with a parent who has a mental illness or substance use disorder have a higher risk of psychiatric problems themselves.

Adolescence

Adolescence is typically the stage of life where mental health disorders tend to become more apparent. The risk factors and contributors to wellbeing in childhood apply equally to those in adolescence. In addition, several other contributing factors appear. It is in the years of adolescence when the use of substances, including alcohol and drugs, first appear.

Adulthood

Experiences and emotional capabilities that were developed through childhood and adolescence are important factors in the effect that particular events and scenarios in adulthood have on mental health outcomes.

The WHO highlights that the allocation and balance between work and leisure time is critical to wellbeing in adulthood. Exposure to high stress and anxiety is strongly influenced by the share of time working, caring for others, or time spent in an insecure economic environment. Individuals with poor socioeconomic security and, in particular, unemployment are also at higher risk to mental health disorders. Individuals with chronic illness or disability are at higher risk of poor mental health. This is particularly true for conditions with high rates of stigmatization, such as HIV/AIDS.

Older age

Older-age individuals have notably high risk of poorer mental health and wellbeing. Typically, this results from notable changes in life conditions (such as a cease in employment which affects both the feeling of contribution and economic freedom), higher social exclusion, and loneliness. This is particularly true when an older individual begins to lose close family and friends. Bereavement in general is an important predictor of mental health disorders such as depression. A decline in physical health can have major impacts on life

capabilities by affecting an individual's mobility and freedom. Older individuals are also at higher risk of abuse or neglect from carers and, in some cases, family members (WHO 2013).

Economics and Mental Wellness

Depression affects at least 322 million people globally, or approximately 4.4% of the world's population, and is rated by WHO as the leading cause of disability worldwide.

A systematic review of over 100 research studies on mental health outcome in times of economic recession has found that periods of economic recession are associated with a higher prevalence of mental health problems, including common mental disorders, substance disorders, and ultimately suicidal behavior (Frasquilho et al. 2016).

Regarding the effect of income on happiness, the World Happiness Report 2017 drew on mental health surveys from the United States, Australia, the United Kingdom, and Indonesia. They found that, in the three Western societies, diagnosed mental illness emerges as more important than income, employment, or physical illness as a determinant of happiness. In Indonesia, while mental health is important, it is less so than income.

The relative income level of a country and the priorities of its people determine the extent to which income impacts on happiness. By and large, happiness level does not rise at the same time as national income levels rise. People compare their income levels with others, and a relative rise is not a source of happiness.

In asking whether the same factors effect misery as effect life satisfaction, one survey used by the World Happiness Report team examined how much misery, in principle, could be avoided by eliminating either poverty, low education, unemployment, living alone, physical illness, or mental illness.

They found that, in all countries, the most powerful effect would come from the elimination of depression and anxiety disorders, which are the main forms of mental illness. This turns out to be the least costly way of reducing misery. As can be seen from the many bodies of evidence referenced in this section, depression and anxiety respond readily to the many paths to mental wellness available today—paths that can be self-managed and are of low cost or no cost.

Within this context, this section on mental wellness will begin by looking at mental health in Asia.

Rising Mental Illness in Asia

In Asia, problems arising from poor mental health are the second largest contributor to years lost because of disability. Across Asia, a growing percentage of the adult population experiences a diagnosable mental illness in any given year: from 4% (reported in Singapore) to 20% (Viet Nam, Thailand, New Zealand, and Australia). In the People's Republic of China (PRC), India, Japan, the Republic of Korea (ROK), Thailand and Malaysia, prevalence rates have increased.

Economic damage

Data from the WHO and the Organisation for Economic Co-operation and Development data have identified the five leading mental health problems in the Asia and Pacific region: (i) depression, (ii) anxiety, (iii) post-traumatic stress disorder, (iv) suicidal behavior, and (v) substance-abuse disorder.

For example, a cross-sectional study on major depressive disorder showed a prevalence of 20.0% in Thailand; 19.9% in Taipei, China; 19.4% in the ROK; 17.5% in Malaysia; and 16.5% in the PRC. Few of these conditions are adequately addressed in Asia and Pacific countries.

In the last few years, there have been efforts in Asia and Pacific countries to raise the profile of mental health; establish legal and policy frameworks for more comprehensive, coordinated disease management; expand investment in infrastructure and human resources; and reduce stigmatization. Partly, this acknowledges the heavy economic toll exacted by mental illness. Without factoring in suicide, mental health issues are projected to reduce economic growth in both India and the PRC by more than \$9 trillion between 2016 and 2030.

Wide regional variation

Lower middle-income countries, such as India, the Philippines, Viet Nam, Indonesia, and Pakistan, face many challenges, including little available medical treatment, inadequate investment (typically only 1% or less of meagre health care budgets), lack of capacity to spend funds effectively, dilapidated facilities, and critically low numbers of mental health professionals. For example, in India, Pakistan, and Indonesia, there are 0.3 or fewer psychiatrists per 100,000 population. In the PRC, there are approximately 20,000 psychiatrists for a population of 1.4 billion; around 92% of an estimated 173 million people in the PRC are suffering from mental disorders go without care.

A common goal across the region is de-institutionalization—changing the focus of mental health management from secondary care to integrated community-based care with multidisciplinary input. Yet, while global models of mental health prioritize the individual, more family-oriented cultures prevail in Asia and Pacific countries. This family orientation to mental health may, on the one hand, complicate moves to expand community-based services and access to professional care, especially if lack of funding obliges families to accommodate patients. On the other hand, it opens new opportunities for preventive and supportive care that are more in line with the shift towards patient-centered, integrated mental health care, specifically around the potential for mental wellness pathways to impact anxiety and depression—the leading causes of mental health problem in Asia and the largest economic burden of mental health problems in the region.

Youth and Digital Media

The United Nations World Happiness Report 2019 cites a number of studies in the United States that have found that adolescents and young adults who spend more time on digital media are lower in well-being (e.g., Booker et al. 2015, Lin et al. 2016, and Twenge and Campbell 2018). For example: Girls who spend 5 or more hours a day on social media are three times more likely to be depressed than non-users (Kelly et al. 2019). Heavy internet users (versus light users) are twice as likely to be unhappy (Twenge and Campbell 2018).

Activities linked to more happiness include sleeping, face-to-face social interaction, and attending religious services. These are less frequent activities among iGen teens compared with previous generations. Overall, activities related to smartphones and digital media are linked to less happiness, and those not involving technology are linked to more happiness.

Defining Mental Wellness

A collaboration of interdisciplinary researchers and practitioners from the Mental Wellness Initiative (MWI) of the Global Wellness Institute has produced a white paper that mapped contemporary wellness pathways and evidence, and the future implications for mental health and wellbeing. The MWI's White Paper on Mental Wellness: Pathways, Evidence, and Horizons conceptualizes wellness in terms of general sense of wellbeing in the physical, social, occupational, spiritual, financial, and environmental aspects of our lives. The process of maintaining mental wellness is viewed as lifelong and involves developing the skills and knowledge to make conscious and intentional choices towards living a healthy, purposeful, and fulfilling life. This lifelong process enables individuals to realize their potential; cope with daily stresses; work productively; and contribute meaningfully to family, community, and society (Bodeker et al. 2018).

Emotional wellbeing. The stream of research that defines wellbeing by the degree of positive feelings experienced, such as happiness, and the perception of one's overall life, whether the individual is satisfied or not, is known as emotional wellbeing (Diener, Suh, Lucas, and Smith 1999; and Gurin, Veroff, and Feld 1960 in Magyar and Keyes 2019).

Psychological wellbeing. The next stream of research, known as psychological wellbeing, includes modalities of positive functioning where the individual realizes their potential in terms of autonomy and personal growth. Those who are high in emotional wellbeing feel good about life, while those who have high psychological wellbeing or social wellbeing function well in daily routine and are resilient (Patel et al. 2018 and Magyar and Keyes 2019).

Resilience and balance. In a scoping review by Christmas and Khanlou (2019) on the definition of youth resilience, mental health is seen as 'a state of wellbeing in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community'(WHO, 2016). The notion of "normal stresses of life" stands in contrast to the definition of resilience provided by Tusaie et al. (2007) in Christmas and Khanlou (2018) where good mental health or resilience is the capability to adapt better than expected in the face of significant adversity or risk. A more recent definition of wellbeing is "the balance point between an individual's resource pool and the challenges faced" (Hanc et al. 2018, p. 230).

Flourishing. A multidimensional construct of wellbeing, with the term "flourishing" or "optimal functioning", is now a common approach in wellbeing research. The pioneering work of positive psychology founder, Marten E Seligman, has aligned the definition of wellness to endeavors that strive to capture the complex nature of human flourishing (through positive emotion, engagement, relationships, meaning, and accomplishment) instead of preventing or ameliorating "mental illness" (Seligman, Parks, and Steen 2004 and Hanc, McAndrew, and Ucci 2018).

Mental wellness, in the view of the Lancet Commission, can be "defined as an asset or resource that enables positive states of wellbeing and provides the capability for people to achieve their full potential" (Patel et al. 2018, p. 1562). The challenge to demarcate the differences between mental wellness and disorder is such that an individual could struggle with symptoms of mental disorder, but at the same time be able also to maintain a degree of mental health parallel to their expectations of life satisfaction, flourishing and achieving their potential. According to the authors of the Lancet Commission report, the association between mental health and disorder is not linear, even though it may seem that they exist on a continuum (Patel et al. 2018).

Social foundations of wellbeing. The United Nations World Happiness Report 2017 identifies four factors as best representing different aspects of the social foundations of wellbeing. These are social support, freedom to make life choices, generosity, and absence of corruption in government and business.

Among the many findings cited, two key social variables—social support and volunteering—are consistently associated with better self-reported health status. Positive mental health, well-being, and flourishing refer to the presence of high levels of positive functioning—primarily in the mental health domain (inclusive of social health). However, in its broadest sense, well-being encompasses physical, mental, and social domains.

Mental Wellness Strategy

The mental wellness strategy is to focus on what everyone can do in a self-managed and self-empowering way to enhance their own mental wellbeing by using evidence-based pathways that work for them. Evidence is of central importance because it offers wellness service providers a sound base from which to explain this approach of self-managed progress to mental wellbeing.

Mental wellness: “... is a dynamic state, in which the individual is able to:

- develop their potential,
- work productively and creatively,
- build strong and positive relationships with others, and
- contribute to their community”.

(Government of the United Kingdom, Office for Science 2008, p10).

This is a new approach to public health with mental health as an integral and complementary part of the proposed new direction. It places health improvement as everyone’s responsibility. Factors of self-esteem, confidence, and resilience are seen as key to health behavior change. United Kingdom Public Health: White Paper - Healthy Lives Healthy People (2010).

The Global Wellness Institute’s White Paper on Mental Wellness has identified several evidence-based pathways for creating and maintaining mental wellness that are low-cost, effective, and easily implemented at the individual and community levels. These are in the section on Overview of Wellness Modalities that follows. But, first, important developments in neuroscience in the past decade or so have revealed that the brain can grow and create new connections across the adult life span, given the influence of suitable wellness methods, and that this, in turn, can contribute to actualizing fuller human potential and reducing mental health challenges.

Brain Plasticity

During the 1990s, in the Decade of the Brain 1990–1999, knowledge of the most complex structure in the universe underwent a paradigm shift. While the scientific community had been convinced that the human brain was fixed and incapable of change upon reaching adulthood and born with a fixed number of brain cells that would decline inevitably with age, new evidence emerged that proved this paradigm was inaccurate and far from the truth. Discovery that stem cells exist in the adult brain is shown to have the capacity to develop into mature functional neurons that aid in memory and learning in a remarkable process called “neurogenesis”. In line with this new evidence, we have substantial knowledge that can explain how wellness habits promote our brain to change and rewire itself through a lifelong process termed “neuroplasticity”.

Neuroplasticity is the ability of the nervous system to adapt, change, and rebuild and is the strongest during our first 5 years of life. The agile nature of neural cells occurs at multiple levels, ranging from microscopic to the observable and behavioral. On the other hand, brain plasticity is also vulnerable to harmful, dysfunctional, and undesirable adaptations and change, despite its ability to make favorable positive changes. Therefore, in this critical period of activity-dependent plasticity, neural connections are formed at an immensely rapid pace. This window of heightened plasticity, our first 5 years of life, provides us with the invaluable ability to learn with enormous ease. Even new skills may be acquired through mere observation, immersion, and interaction in our social environment. During the developmentally sensitive periods of “use it or lose it”, neural connections become stronger and more permanent through repeated use. Weak or unused neural connections may prune off. Hence, repetition is the key to learning and mastery (Choy in Bodeker et al. 2018).

The impact of stress on a developing brain, such as a child or an adolescent, can have a lifelong effect and is avoidable when provided with the right wellness support. Psychosocial stressors in childhood, such as poverty, parental separation and divorce, emotional neglect, psychological, physical or sexual abuse, and mental illness and substance use in the home environment, are capable of negative rewiring of the development of our prefrontal cortex. The prefrontal cortex is the part of the higher-level brain regions that benefit from wellness practices.

When the prefrontal cortex is exposed to experiential stimuli (i.e., sensory, emotional, and intellectual) at moderate levels of stress, our brain is capable of optimal performance. Too little or too much arousal impairs functioning. The ability to challenge ourselves outside our comfort zone promotes neuroplasticity in favor of growth and resilience. Therefore, the

deliberate and active maintenance of this perpetual back-and-forth state of balance between optimal stress and restorative rest is vital for driving positive neuroplastic changes.

Committing to a life of mental wellness is instrumental to both survival and flourishing in today's world. To meet the evolving needs of our present and the future, it is vital to harness our brain's plasticity towards positive growth. Wellness-based neuroplasticity enables us to achieve self-actualization and, ultimately, to undergo a transformation towards self-transcendence. Only when we realize this dimension of wellbeing are we able to set aside our own needs to help others fulfil theirs. To this end, we will be able to create a sustainable, integrated, and harmonious path toward personal and global wellness.

Overview of Wellness Modalities

Wellness modalities are a range of activities and programs that have positive effects on the somatic, psycho, and emotional wellbeing. In this section, we provide a general introduction to a few modalities that experienced a surge in research activities, now translated to the broader population.

The microbiome of the human gut is comprised of bacteria, protozoa, fungi, nematodes, and viruses, among others (Wang and Wang 2016). Disruption of the gut-brain axis (GBA) is indicated in the pathogenesis of a diverse range of diseases, including Parkinson's disease and irritable bowel syndrome (Wang and Wang 2016). There are more than 500 million information-transmitting neurons embedded in the wall of the human gut, outnumbering those in the spinal cord by five-to-one. These information-transmitting neurons provide the body with "a second brain", known as the enteric nervous system (ENS).

The ENS connects with the central nervous system, the brain, spinal cord, and the autonomic nervous system, creating a bidirectional GBA, which links physiological, behavioral, and cognitive functions with intestinal digestion, absorption, and excretion. The vagus nerve is central to this GBA. The nerve contains 80% of afferent fibers and 20% of efferent fibers and innervates the entire digestive tract. Chronic stress in the early stages of life induces dysbiosis in rats through modifications of intestinal permeability, and may later sensitize adult rats to visceral hypersensitivity (Moussaoui et al. 2017). Stress inhibits the vagus nerve and stimulates the nervous system to produce inflammatory disorders and, thus, favor dysbiosis by disrupting homeostasis (Bonaz, Bazin, and Pellisier 2018). Gut disorders, known as functional gastrointestinal disorders (FGIDs) are associated with the prevalence of both depression and anxiety, and these increase with both the number of FGIDs and the frequency and severity of gastrointestinal symptoms (Pinto-Sanchez et al. 2015).

Nutrition

The International Society for Nutritional Psychiatry Research has reported that: “A traditional whole-food diet, consisting of higher intakes of foods such as: vegetables, fruits, seafood, whole grains, lean meat, nuts, and legumes with avoidance of processed foods is more likely to provide the nutrients that afford resiliency against the pathogenesis of mental disorders.” The GBA is emerging as a key pathway for modulating behavior.

As noted in a 2017 collection of articles published by Nature on what is known as the GBA: “It is becoming increasingly evident that bidirectional signaling exists between the gastrointestinal tract and the brain, often involving the gut microbiota. This relationship, commonly dubbed the gut–brain axis (or the microbiota–gut–brain axis), involves various afferent and efferent pathways such as the vagus nerve and the hypothalamic-pituitary-adrenal pathway to regulate aspects of homeostasis such as satiety and hunger, and inflammation. Disruption of the gut–brain axis has been shown to be involved in the pathogenesis of a diverse range of diseases, including Parkinson’s disease and irritable bowel syndrome. Key aspects of the gut–brain axis include immune, neuroendocrine and neural factors” (Nature 2017: <http://www.nature.com/collections/dyhbndhpzv>).

What we know from this body of research is that there are more than 500-million information-transmitting neurons embedded in the wall of the human gut, outnumbering those in the spinal cord by five-to-one. These provide the body with what has been referred to as “a second brain”, and is known as the ENS. The ENS connects with the central nervous system, the brain, the spinal cord, and the autonomic nervous system, creating a bidirectional GBA, which links physiological, behavioral, and cognitive functions with intestinal digestion, absorption, and excretion.

Research has found that gut disorders, known as FGIDs, are associated with the prevalence of both depression and anxiety, and these increase with both the number of FGIDs and the frequency and severity of gastrointestinal disorders symptoms (Pinto-Sanchez et al. 2015).

Antibiotic use in neonates and in young infants has a severe impact on gut microbiota development. Repeated courses of antibiotics given during the first years of life affect children’s gut microbiota and can make them predisposed to conditions, such as allergies, asthma, obesity, or even type 2 diabetes. This is because antibiotics profoundly alter gut microbiota. In turn, this has implications for the health of the GBA and, in turn, the developing child’s physiological, behavioral, and cognitive functions (Van der Beek 2018).

In a major review of stress and the GBA, the authors note that: “The concept of psychobiotics, bacteria with positive effects on mental health, was coined in 2013 and has recently been

expanded to include other microbiota-targeted interventions that can positively modify mental health including in healthy volunteers. Animal studies have led the way in showing that specific strains of *Bifidobacteria*, *Lactobacillus* or *Bacteroides* can have positive effects on brain and behaviour, including evidence that certain bacteria can enhance cognitive processes and affect emotional learning. However, results from these studies are only slowly being translated to humans (...) the relationship between diet and the microbiota-gut-brain axis is ripe for exploitation to develop therapeutic strategies for treating stress-related disorders” (Foster et al. 2017, p. 9). Studies have shown that increases in the amount of good bacteria in the gut can curb inflammation and cortisol level, reduce symptoms of depression and anxiety, lower stress reactivity, improve memory, and even lessen neuroticism and social anxiety. This shows that, probably, the beneficial gut bacteria or probiotics function mechanistically as delivery vehicles for neuroactive compounds. Thus, a psychobiotic is a live organism which, when ingested in adequate amounts, produces a health benefit in patients suffering from mental illness. Now, researchers are of the opinion that study of novel class of probiotics may open up the possibility of rearrangement of intestinal microbiota for effective management of various psychiatric disorders and mental health conditions.

There is now a substantial body of research examining the benefit of nutrient supplementation in people with mental disorders. An international team of scientists led by Sydney’s NICM Health Research Institute, Western Sydney University, Australia, examined the “best of the best” available evidence. The aim was to provide a clear overview of the benefit of specific nutrient supplements, including dosage, target symptoms, safety, and tolerability, across different mental disorders. Although the majority of nutritional supplements assessed did not significantly improve mental health, the researchers found strong evidence that certain supplements are an effective additional treatment for some mental disorders. Here is a summary of the results:

- (i) The strongest evidence was found for omega-3 supplements (a polyunsaturated fatty acid) as an add-on treatment for major depression, reducing symptoms of depression beyond the effects of antidepressants alone.
- (ii) There was some evidence to suggest that omega-3 supplements may also have small benefits for attention deficit hyperactivity disorder.
- (iii) There was emerging evidence for the amino acid N-acetylcysteine as a useful adjunctive treatment in mood disorders and schizophrenia.
- (iv) Special types of folate supplements may be effective as add-on treatments for major depression and schizophrenia; however, folic acid was ineffective.
- (v) There was no strong evidence for omega-3 for schizophrenia or other mental health conditions. (Firth et al. 2019)

Clinical studies (Jacka et al. 2017, Mischoulon et al. 2013, and Sarris et al. 2012) have found omega-3 fatty acids to be beneficial in the treatment of bipolar depression, post-traumatic stress disorder, major depression, and the prevention of psychosis

In a study on cognitive functioning and brain aging, higher levels of B family vitamins, as well as vitamins C, D, and E, were all associated with higher scores on cognitive tests. The same positive relationship was found for omega-3 fatty acids, which have been linked previously to better brain health. But, those with higher levels of trans fats, found in a variety of junk foods, performed more poorly in thinking and memory tests. Their magnetic resonance imaging (MRI) scans also revealed more brain shrinkage than people who had lower trans fats levels. The study found that, overall, nutrition accounted for 37% of the variation in brain volume (Bowman et al. 2012).

A landmark study has found that inexpensive B vitamins stopped shrinkage in the area of the brain called the medial temporal lobe that defines Alzheimer's disease. The study, led by Professor David Smith from the University of Oxford, gave a combination of vitamin B6 (20 milligrams), B12 (500 micrograms), and folic acid (800 micrograms) or placebo pills to people with mild cognitive impairment (MCI), the stage before a diagnosis of dementia or Alzheimer's disease. In those with high homocysteine levels, the specific areas of the brain associated with Alzheimer's disease shrank eight times more slowly in those taking B vitamins than in those on the placebo. This is strongly indicative that the B vitamins may be substantially slowing down, or even potentially arresting, the disease process in those with early stage cognitive decline. This is the first treatment that has been shown to do this (Douaud et al. 2013).

Traditional Asian foods that utilize microorganisms

While adding fermented foods and beverages to the diet has been proclaimed recently as the newest health movement in the United States, fermented foods are a well-established part of the daily diet in many Asian countries because there is a long tradition of fermented foods across Asian cultures.

In Japan, *Aspergillus* strains of bacteria provide the means to ferment rice wine (sake), soy sauce (shoyu), soybean paste (miso), and distilled spirits (shochu) (Zhu and Tramper 2013). This species also contributes to the distinctive color, flavor, and aroma of Asian traditionally fermented foods.

Kimchi, a fermented food primarily eaten in the ROK, is made from pickled vegetables and is another variety of microbes supplying the bacteria to ferment to a food source. The microbial communities contributing to the fermentation process of kimchi were analyzed and found to

come from three main sources. These types of analysis are difficult as the microbes in foods are rapidly changing as fermentation is a continual process in food products (Jung et al. 2011).

Movement away from these traditional foods could contribute to a change in the amount and diversity of the intestinal microbiome and reduce exposure to beneficial microbes found in these foods.

Exercise and Mental Wellness

In addition to the well-documented effects of exercise on quality of life (QOL) and longevity, there is an emerging body of findings that show the benefits of exercise to mental wellbeing (Lear et al. 2017).

The Journal of Clinical Psychiatry published a study about exercise as a secondary treatment for patients with major depressive disorder and who had not achieved remission through drugs alone. The researchers evaluated two exercise doses: One group of patients burned 4 kilocalories per kilogram each week, while another burned 16 kilocalories per kilogram weekly. They found that both exercise protocols led to significant improvements, though the higher-dose exercise program was more effective for most patients (Trivedi et al. 2011).

In subsequent research funded by the United States National Institute of Mental Health, the same research team looked at affective response to an initial exercise session as a predictor of the effectiveness of treatment for depressed patients. Noting that predicting treatment response very early in the course of treatment can avoid unnecessarily lengthy trials with ineffective treatments, the researchers looked at the same low- and high-dose exercise regimens. They found that response to the very first high-dose exercise session was a reliable predictor of treatment outcome for depression. However, this was not the case for low-dose exercise. Knowledge of initial response to high-dose exercise has clinical utility to predict treatment response to exercise in depression and enable clinicians to match the "right patient" with the "right treatment" (Suterwala et al. 2016).

The growing body of research findings on exercise and mood is now being translated into 'how to' approaches. For example, in the Oxford University Press book *Exercise for Mood and Anxiety*, authors Michael Otto, PhD and Jasper Smits, PhD translate scientific findings and principles of behavior change into accessible strategies for the general public. The focus is on helping to establish and maintain an exercise program by understanding the relationship between mood and motivation. The strategy includes worksheets and checklists to help

record information on moods before and after a workout in order to improve motivation (Otto and Smits 2011).

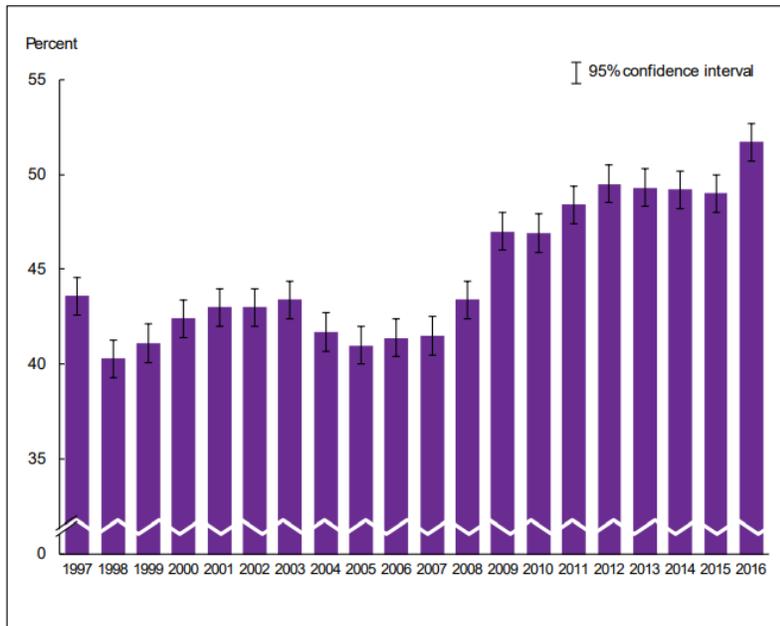
In deprived neighborhoods, there are benefits to mental wellbeing from boosting physical activity among residents, especially those with particularly low general levels of mental wellbeing. A study of 3,854 adults from 30 neighborhoods in Glasgow, United Kingdom found that adults who do more physical activity generally have better mental wellbeing (Mason and Kearns 2013).

At present, there is no scientific consensus on how exercise elevates mood. One theory is that exercise alleviates chronic depression by increasing serotonin (the neurotransmitter targeted by antidepressants) or brain-derived neurotrophic factor, which supports the growth of neurons.

Another theory suggests that exercise helps by normalizing sleep, which is known to have protective effects on the brain. Psychological explanations include the possibility that exercise may boost a depressed person's outlook by helping them return to meaningful activity, thereby providing a sense of accomplishment.

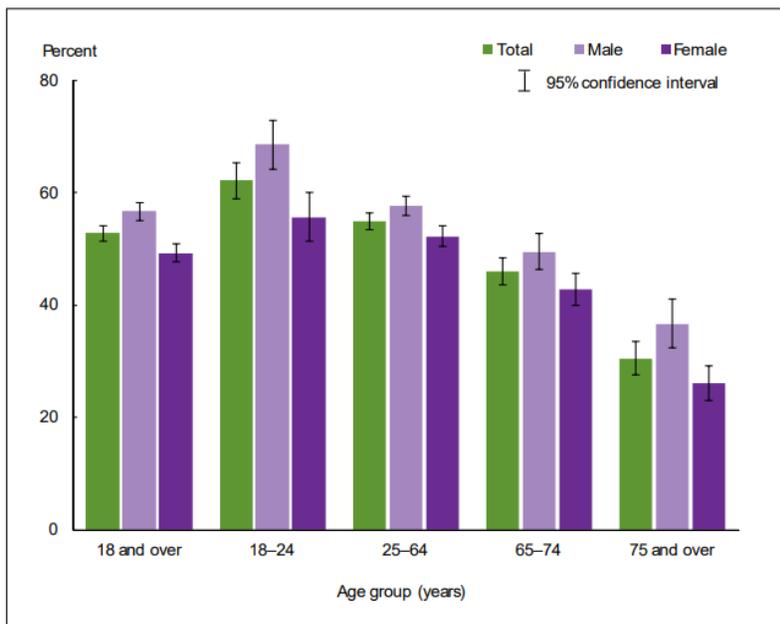
Whatever the reason, exercise is a major platform of wellness policy around the world. The public in industrialized societies is engaging more with exercise. The United States Centers for Disease Control reported that the annual percentage of adults aged 18 and over who met the 2008 federal physical activity guidelines for aerobic activity (based on leisure-time activity) was stable from 1997 through 2006 in the 40%-43% range, then steadily increased to 51.7% in 2016. However, as age increased, the percentage of adults who met federal physical activity guidelines for aerobic activity decreased.

Figure 1: Percentage of Adults Aged 18 and Over Who Met 2008 Federal Physical Activity Guidelines for Aerobic Activity through Leisure-Time Aerobic Activity: United States, 1997–2016



Source: CDC. 2017.

Figure 2: Percentage of Adults Aged 18 and Over Who Met 2008 Federal Physical Activity Guidelines for Aerobic Activity through Leisure-Time Aerobic Activity, by Age Group and Sex: United States, 2016



Source: CDC. 2017.

Exercise in Asia and the Pacific

A review of surveillance systems for physical activity identified estimates for adult population physical activity in the Asia and Pacific region, and examined variation in trends and prevalence rates obtained using different physical activity measures. Data were obtained from a MEDLINE search; the WHO's Global Health Infobase; government websites, and reference lists of relevant papers. In total, 56 population surveys from 29 Asia and Pacific countries were identified.

Of the 56 surveys reported, 11 (22%) were conducted more than once. These provided trend information.

Results of a Review of Surveillance Systems for Physical Activity in the Asia and Pacific Region

Countries Surveyed	Results
Indonesia; New Zealand; Singapore; Taipei,China; and Thailand	Demonstrated increase in physical activity levels over time
Australia, Republic of Korea, and Japan	Demonstrated decrease in physical activity over time
Australia, Japan, and New Zealand	No significant changes in either direction were recorded over time (data not shown)

Source: Macniven, Bauman, and Abouzeid 2012.

The study highlighted “an urgent need for standardization of physical activity measures and survey methods used within and between countries, in order to accurately document risk factor prevalence and population trends” (Macniven, Bauman, and Abouzeid 2012, p. 39).

While data collection in the region is inconsistent within and between countries, the importance of exercise for mental health and wellbeing is becoming increasingly clear in the face of robust evidence.

An important new body of research is examining the possibility that benefits from exercise can be inherited. Noting that epigenetics is the study of gene expression changes that occur in the absence of altered genotype, a 2017 review presents experimental evidence that indicate that environmentally induced alterations to epigenetic modifications lead to changes in health and disease across generations (Denham 2017).

Noting the need for new research to establish the link between exercise and epigenetic inheritance for human health and disease prevention, the author of this review, Joshua Denham of the University of New England in Australia, argues that “Such studies could establish an extraordinary role for maternal and paternal exercise training to promote exercise induced adaptations and encourage the prevention age related chronic disease in future generations” (p. 18).

Looking ahead, if the benefit of exercise can be established to confer benefits to successive generations, there is clearly a need for research on the many other wellness modalities referenced here and elsewhere to determine if these benefit also not only the practitioner, but their descendants as well. This would be a research agenda designed to support the need for this generation to take action not only for its own health and wellbeing but, through this, for the improvement of society’s health and wellbeing in the future.

Yoga

In the sphere of mental wellness, some exercise modalities have been well studied and are growing rapidly in popularity both in Asia and globally (Holger et al. 2016).

Yoga is an ancient practice; it has been associated with cultural, religious, and physical activity for more than 2,000 years. Its practitioners have asserted its effect on balancing emotional, physical, and spiritual health for decades, but only recently has there been a move to substantiate these claims through research. So far, the result has been definitive, significant evidence of the broad-ranging benefits of yoga, both as a treatment and as a preventative form of medicine and health care.

For example, a 2016 study conducted in the United States found that about 31 million adults had used yoga, and about 21 million practiced yoga in the past 12 months (Cramer et al. 2016).

Psychological effects. A survey of yoga research reports that, at least, two studies have demonstrated significant increase in mindfulness, while several others have measured reduction in job stress in both office and fire station settings.¹ Studies of yoga’s effects on anxiety are common, with significant series and single session effects on measures of stress, anxiety, fatigue and depression, wellbeing, and vigor. The survey cites several studies in which measures of depression decreased after extended practice (~2 months). In all studies, yoga was found to have increased sleep efficiency, total sleep time, number of awakenings, and sleep quality.

¹ <https://leeware.wordpress.com/2012/03/08/summary-of-fields-yoga-clinical-research-review/>.

Tai Chi

Tai chi, also called tai chi chuan, combines deep breathing and relaxation with flowing movements. Originally developed as a martial art in 13th-century PRC, tai chi is practised around the world today as a health-promoting exercise and a means of developing self-awareness.²

As balance is the core goal of tai chi—balance while in motion—it is no surprise that tai chi has been used as a means of developing and maintaining balance among those at most risk of falling and often incurring life-damaging injuries, viz. the elderly. A meta-analysis of studies on the effects of tai chi in preventing falling in the elderly found that tai chi exercise is effective indeed for preventing falls in older adults. The preventive effect seems to increase with the frequency of tai chi practice. Interestingly, the study found a difference in effect with different styles of tai chi. Yang style tai chi (created in the 19th century and the most widespread form of tai chi today) seemed to be more effective than Sun style tai chi, the most recently created form of tai chi (Huang et al. 2017).

Veterans with post-traumatic stress symptoms took part in a four-session introduction to tai chi in Boston. In addition to reporting a high degree of satisfaction with the program, participants reported feeling very engaged during the sessions, and found tai chi to be helpful in managing distressing symptoms (i.e., intrusive thoughts, concentration difficulties, and physiological arousal) (Niles et al. 2016).

In 2016, a map of 107 systematic reviews of tai chi was published. The map identified a number of areas with evidence of a potentially positive treatment effect on patient outcomes, including tai chi for hypertension, fall prevention outside of institutions, cognitive performance, osteoarthritis, depression, chronic obstructive pulmonary disease, pain, balance confidence, and muscle strength (Koch et al. 2014).

Dance

The diverse cultures of Asia are prominent in the many dances that are influenced by the region's religion, rituals, and mythical stories. In modern PRC, "every day, an estimated more than 100 million people—dubbed 'dancing aunties' as they are primarily older women—take over squares and parks to tango, waltz, and grind out everything from flamenco to Chinese traditional dance" (Japan Times 2018).

² NHS Choices: <http://www.nhs.uk/Livewell/fitness/Pages/taichi.aspx>.

The PRC's 2016 national fitness plan stressed "square dancing" as a team sport to be "vigorously developed" and, in 2017, it became an official event at the National Games of the PRC along with athletics and swimming.

A quarter of a century of research has underscored the benefits of dance and dance movement therapy on generalized mental well-being³ on brain development in adults and children (Brown and Parsons 2008 and Karpati et al. 2015), on mood stabilization in adolescents (Anderson et al. 2014), and in reducing depression and anxiety across the age-span (Bräuninger 2012). In short, dance has been shown to combine many different factors that contribute to improvement in the competence needed in everyday life (Ritter and Lowe 1996).

Research across the age span has highlighted the differing benefits of dance for different age groups. Children, especially girls, have been found to make significant physical advances as well as improvements in measures of psychological well-being through dance training (Jeong et al. 2005). Adults have been found to undergo structural brain changes associated with creativity and artistic expression (Koch et al. 2014). Older-aged dance participants with Parkinson's disease have shown improved mobility, reduced tremor, and improved social outreach (Westheimer et al. 2015). There is an international program now called Dance for Parkinson's Disease that began in New York and has spread to many countries. It offers dance as a means of enhancing QOL and improving symptoms in people with Parkinson's disease.⁴

A New England Journal of Medicine study examined physical and cognitive activities associated with reduced risk of developing Alzheimer's disease. The researchers found that cognitive activities, such as reading, playing board games, and playing musical instruments, were associated with a lower risk of dementia. However, of the 11 physical activities, "dancing was the only physical activity associated with a lower risk of dementia" (Verghese et al. 2003).

Mental health conditions, such as anxiety and depression, have been reduced through participation in dance and dance movement therapy. A report in the online newsletter of the Harvard Mahoney Neuroscience Institute in the Harvard Medical School states that: "Studies show that dance helps reduce stress, increases levels of the feel-good hormone serotonin, and helps develop new neural connections, especially in regions involved in executive function, long-term memory, and spatial recognition" (Edwards 2016 and Mills and Daniluk 2002).

³ S. Koch, T. Kunz, S. Lykou, and R. Cruz. 2014. Effects of dance movement therapy and dance on health-related psychological outcomes: A metaanalysis. *The Arts in Psychotherapy*, 41:1, 46–64.

⁴ Dance for Parkinson's Disease: <http://www.capturinggracefilm.com/about-dance-for-pd/>; <https://danceforparkinsons.org/>; <http://www.danceforparkinsonsuk.org/>.

Meditation

Meditation is like exercise for the brain and has been shown to assist in mental health maintenance, improve memory, empathy, and sense of self. A meta-analysis in the Journal of the American Medical Association identified almost 19,000 studies on different forms of meditation. Four decades of studies highlight the effects of meditation in enhancing immunity, reducing depression and anxiety, improving academic performance, reducing age-related cognitive decline, increasing happiness and QOL, and managing and reducing trauma.

Brain changes associated with the practice of meditation include enhanced neural plasticity and increased grey and white matter development in the brains of meditators. Recent studies on the Transcendental Meditation technique have found reductions in anxiety (Tomljenović et al, 2016) and post-traumatic stress (Rees et al. 2014); improvement in the mental health of caregivers (Nidich et al. 2015); and, in a study on survivors of the Japanese earthquake-tsunami of 2011, improvements in both mental and physical symptoms following instruction in this meditation technique (Yoshimura et al. 2015).

In a research conducted at the Massachusetts General Hospital, magnetic resonance images were taken of the brain structure of 16 study participants 2 weeks before and after they took part in an 8-week mindfulness meditation program. The research team found increased grey-matter density in the hippocampus, known to be important for learning and memory, and in structures associated with self-awareness, compassion, and introspection. Participants' reports of reduced stress were correlated with decreased grey matter density in the amygdala, which is known to play an important role in anxiety and stress (Holsell et al. 2011).

With benefits ranging from enhanced mental wellbeing through to reduction of deeply traumatic stress, from changes in brain structure and functioning through to changes in gene expression and telomere length, and reduced age-related decline, meditation stands as a primary pathway for lifelong enhancement of physical and mental wellness.

Massage

A meta-analysis of 37 studies of massage has found that multiple treatments reduced pain. Reductions of anxiety and depression were the largest effects, with a course of massage treatment providing benefits similar in magnitude to those of psychotherapy.

The United States National Institutes of Health National Center for Complementary and Integrative Health has the following to say about massage.⁵

A lot of the scientific research on massage therapy is preliminary or conflicting, but much of the evidence points toward beneficial effects on pain and other symptoms associated with a number of different conditions. Much of the evidence suggests that these effects are short term and that people need to keep getting massages for the benefits to continue.

Researchers have studied the effects of massage for many conditions. Some that they have studied more extensively are the following:

Mental health

- (i) A 2010 meta-analysis of 17 clinical trials concluded that massage therapy may help to reduce depression.
- (ii) Brief, twice-weekly yoga and massage sessions for 12 weeks were associated with a decrease in depression, anxiety, and back and leg pain in pregnant women with depression. This was shown by a 2012 clinical trial funded by the National Center for Complementary and Integrative Health. Also, the women's babies weighed more than babies born to women who did not receive the therapy.
- (iii) However, a 2013 research review concluded that evidence was not enough to determine if massage helps pregnant mothers with depression.
- (iv) A 2010 review concluded that massage may help older people relax.

Headaches. Clinical trials on the effects of massage for headaches are preliminary and only somewhat promising.

Cancer. Numerous research reviews and clinical studies have suggested that, at least for the short term, massage therapy for cancer patients may reduce pain, promote relaxation, and boost mood.

HIV/AIDS. In 2010, a review of four small clinical trials concluded that massage therapy may help improve the QOL for people with HIV or AIDS.

Infant care. A 2010 review suggested that massaging preterm infants by using moderate pressure may improve weight gain. A 2013 review determined that there is insufficient evidence to know if massage benefits healthy infants who are developing normally.

⁵ National Center for Complementary and Integrative Health: <https://nccih.nih.gov/health/massage/massageintroduction.htm>.

Sleep

Chronic sleep problems affect 50%–80% of patients in a typical psychiatric practice, compared with 10%–18% of adults in the general United States population. Sleep problems are particularly common in patients with anxiety, depression, bipolar disorder, and attention-deficit hyperactivity disorder. Neuroimaging and neurochemistry studies suggest that a good night's sleep helps foster both mental and emotional resilience, while chronic sleep disruptions set the stage for negative thinking and emotional vulnerability. Regular exercise may also help enhance sleep.

Social Dimensions of Mental Wellness

The social dimensions of mental wellness include: “the capacity to make health and happiness enhancing relationships with others. People with mental wellbeing know themselves and their needs, have clear boundaries, relate to others using the skills of emotional literacy and accept and manage conflict without manipulation or coercion. People with mental wellbeing are also generous, wise and compassionate. They make good decisions on behalf of others. It therefore follows that promoting the mental wellbeing of all, particularly of those who are in positions of power, is an important approach to preventing social inequality and unhealthy policy”.⁶

In its broadest sense, well-being encompasses physical, mental, and social domains. By contrast, loneliness or social isolation is, in terms of mortality risk, comparable with established risk factors such as smoking (Lunstad et al. 2010).

The United Nations World Happiness Report 2017 identifies four factors that best represent different aspects of the social foundations of wellbeing. These are social support, freedom to make life choices, generosity, and absence of corruption in government and business

Among the many findings cited, two key social variables—social support and volunteering—are consistently associated with better self-reported health status.

In the World Happiness Report 2017, the following variables that have broad-based influence on health and wellbeing are cited:

The quality of social institutions has important direct effects on health, as health outcomes are better where corruption is less and government quality generally higher.

⁶ Faculty of Public Health. http://www.fph.org.uk/concepts_of_mental_and_social_wellbeing.

Maintaining or improving the quality of the social context has been shown to have distinct protective and healing outcomes.

Generosity, which The World Happiness Report's research has found to be an important source of happiness, also turns out to benefit physical health. Research shows that health benefits are greater for the givers than for the receivers of peer-to-peer and other forms of support.

Having someone to count on has a large impact on life evaluations even after allowing for the effects flowing through higher incomes and better health.

The World Happiness Report 2017 addresses the social foundations of happiness: "To feel secure, people need to feel that others care for them and will come to their aid when needed. To some extent, being in such a network of usually mutual obligations sets limits on each person's freedom to make life choices freely, as the interests of others must always be borne in mind. It is apparent from our results that both features are important for a good life. It is also clear from the data that these different aspects need not conflict with each other, as the most successful societies are ones where both measures of the social fabric are strong. Indeed, some of the features of the social fabric that reflect its ability to care for people, in particular the health and education systems, also serve to level out the differences in life opportunities that affect the breadth and reality of the life choices open to each individual" (p. 32).

Addressing the role of generosity as a social determinant of happiness, the report notes that: "subjective well-being research is now showing that in all cultures, and even from infancy, people are drawn to pro-social behaviour, and that they are happier when they act pro-socially" (p.32).

Social Laughter

Laughter yoga (*Hasyayoga*) is a practice involving prolonged voluntary laughter. Laughter yoga is based on the belief that voluntary laughter provides the same physiological and psychological benefits as spontaneous laughter. Laughter yoga is done in groups, with eye contact, jokes, and playfulness between participants. Forced laughter soon turns into real and contagious laughter. In the mid-1990s, laughter yoga was practiced in the early mornings in open parks, primarily by groups of older people. Laughter yoga was made popular as an exercise routine developed by Indian physician Madan Kataria, who wrote about the practice in his 2002 book *Laugh For No Reason*: https://en.wikipedia.org/wiki/Laughter_yoga. Some small-scale scientific studies indicate

that laughter yoga may potentially have some medically beneficial effects on cardiovascular health and mood (Dolgov-Kaspar et al 2012 and Shahidi et al. 2011).

As it is termed, social laughter seems to release endorphins associated with feelings of wellbeing and heightened mood. Oxford University researchers conducted a series of experiments and found that pain thresholds—an indicator for endorphin release—were significantly higher after laughter. The researchers suggest that “laughter, through an endorphin-mediated opiate effect, may play a crucial role in social bonding” (Dunbar et al. 2012).

In subsequent research, they found that social laughter “increased pleasurable sensations and triggered endogenous opioid release in thalamus, caudate nucleus, and anterior insula. In addition, baseline MOR availability in the cingulate and orbitofrontal cortices was associated with the rate of social laughter” (Manninen et al. 2017).

One research team paired laughter with physical exercise, noting that: “despite the health benefits of physical activity and the risks of physical inactivity, many adults don't engage in sufficient physical activity to achieve health benefits. Maintaining the motivation to adhere to regular physical activity is a challenge for many older adults” (Greene et al. 2016).

Among participants, the study found significant improvements in mental health, aerobic endurance, and perceived benefit of exercise participation. When surveyed about their satisfaction with the program, 96.2% found laughter to be an enjoyable addition to a traditional exercise program, 88.9% said laughter helped make exercise more accessible, and 88.9% reported that the program enhanced their motivation to participate in other exercise classes or activities.

The researchers consider that simulated laughter may be an ideal way for older adults with functional or cognitive impairment to achieve the health benefits of laughter, which include improved physiological and psychological functioning. Participants simply choose to laugh and initiate laughter as bodily exercise. There is no need to rely on cognitive skills to “get the joke” because there is no joke.

Environment

Nature

The master of Chinese medicine, Sun Simiao, advised that fresh air, daily walks in natural landscapes, and food from a fresh and wholesome garden, cultivated in part by the owner, were the fundamentals of creating and maintaining good health. Sun Simiao was born around 581 CE and died in 682 CE after completing his 30-volume Encyclopedia of Medicine, the first

few volumes of which were not dedicated to medicine at all, but to lifestyle, diet, and exercise. The Chinese poet and scholar Tao Yuanming, later known as Tao Qian (365–427), resigned his post as a civil administrator and chose a life of poetry, farming, family, friendships, wine, and, above all, a connection with the deep pulse of life—known in Chinese tradition as the Tao. Both Sun Simiao and Tao Qian have become Chinese icons of an ideal life in nature.

In a 2010 Japanese study of *shinrin-yoku* (defined as “taking in the forest atmosphere”, or “forest bathing”), researchers found that elements of the environment, such as the odor of wood, the sound of running stream water, and the scenery of the forest can provide relaxation and reduce stress. Those who took part in the study experienced lower levels of cortisol; a lower pulse rate; lower blood pressure; strengthened immunity; and reduced stress, depression, and anxiety.

A 2007 study from the University of Essex in the United Kingdom found that a walk in the country reduced depression in 71% of participants.

By contrast, research from the PRC, where 16 of the most polluted cities are listed in the United Nations’ top 20 most polluted cities in the world, has found that bad air quality contributes to poor mental health and unhappiness. The study looked at the impact of air pollution on several key dimensions, including mental health status, depressive symptoms, moment-to-moment happiness, and evaluative happiness (i.e., overall life satisfaction). What they found was that air pollution reduces all forms of happiness and increases the rate of depressive symptoms over time (Zhang et al. 2017).

Data from over 70,000 women in the United States Nurses’ Health Study revealed that exposure to fine particulate matter was associated with high symptoms of anxiety. The Johns Hopkins team that carried out the research proposed that this may be because exposure to particulate matter air pollution induces or exacerbates anxiety through increased oxidative stress and systemic inflammation. It could also be through promotion or aggravation of chronic disease (Power et al. 2015).

A Swedish study investigated the mental health effects of air pollution on more than half a million children and adolescents. Using a national registry of medication, researchers found evidence for a link between exposure to air pollution and dispensed medications for certain psychiatric disorders in children and adolescents (Oudin et al. 2016).

A number of other studies replicate and expand these findings. What is clear from the perspective of mental wellness is that living with access to green space and nature enhances our mental wellbeing and that exposure to air pollution worsens it.

Clearly, air quality should be a key feature of wellness programs for urban dwellers and for offerings at urban wellness destinations, as should access to nature.

Climate Change: Effect on Mental Health

People who worry about the Earth's animals and plants are more likely than others to experience stress, and even depression, related to climate change.

Researchers in the University of Arizona studied how people's perception of the threat of global climate change affects their mental health. They found that, while some people have little anxiety about the Earth's changing climate, others are experiencing high levels of stress, and even depression, based on their perception of the threat of global climate change. Specifically, psychological responses to climate change seem to vary based on what type of concern people show for the environment, with those highly concerned about the planet's animals and plants experiencing the most stress. By contrast, people higher in egoistic concern did not seem to perceive climate change threats as having a profound effect on their own or their family's life despite the reality that it will. The researchers emphasized that the impact of climate change on individuals seems to be growing slowly and needs to be taken very seriously (Helma et al. 2018).

The quality of green space, including its richness in wildlife, may be more important to mental health benefits than its quantity (Wood et al. 2012). People living near quality green space, full of wildlife and thriving habitats, were twice as likely to report low psychological distress as those living near low-quality open spaces.

People tend to live longer when they have access to green space, and perceived neighborhood greenness is strongly associated with better mental and physical health (Tanako et al. 2002). Those living in highly green areas are much more likely to have better physical and mental health than those living near open areas that are not highly green (Sugiyama et al. 2008).

Nature near home is important particularly for children because it increases their ability to cope with stressful life events, directed attention, and cognitive function (Wells 2000). Exposure and connectedness to nature have been found to be associated with body appreciation and self-esteem in women and men (Swami et al. 2016).

New research has reported that gentle woodland sounds, such as birdsong and the breeze rustling leaves in the trees, are more relaxing than meditation recordings. Researchers exposed participants to three soundtracks: a woodland, a woman guiding a meditation session, and deep silence. When asked to listen to the woodland sounds for one minute,

people felt 30% more relaxed, while stress and anxiety dropped. There was no change in the level of relaxation people felt after listening to the meditation or the silence (National Trust 2019).

Conclusion

Asia is confronted with rising levels of mental illness due in part to pressure or life, poor nutrition, lack of exercise, increased time on digital media, social isolation, and lack of contact with nature. At the same time, levels of mental health professionals are critically low across the region, and there is no realistic scenario where these would increase in the coming generation or two.

This raises the prospect of either increasing burdens of mental illness for countries across Asia or the potential for new and innovative preventive and remediative strategies to be put in place across all levels of society and age groups that focus on self-managed and evidence-based pathways to mental wellbeing.

Depression and anxiety are the mental health issues that impact most on national economies. They are also those mental health concerns that are most easily self-managed by way of the many evidence-based wellness modalities reviewed in this section.

Mental Wellness: Key Take Home Points

1. In Asia, problems arising from poor mental health are the second largest contributor to years lost to disability. Data from the WHO and the Organisation for Economic Co-operation and Development identify the five leading mental health problems in the region as depression, anxiety, post-traumatic stress disorder, suicidal behavior, and substance-abuse disorder. Studies have also found that activities related to smartphones and digital media are linked to less happiness, and those not involving technology are linked to more happiness.
2. Despite wide variation in the profile of mental health across countries in the Asia and Pacific region, a common goal across the region is de-institutionalization; changing the focus of mental health management from secondary care to integrated community-based care with multidisciplinary input.
3. The mental wellness strategy is to focus on what everyone can do in a self-managed and self-empowering way to enhance their own mental wellbeing by using evidence-based pathways that work for them.

4. There is a strong body of research that supports the benefit of wellness practices in reducing the burden of mental illness. These include optimal nutrition according to culture; regular exercise; and rest and inner development practices, such as meditation, tai chi/yoga, and traditional forms of movement and martial arts. Environment has a major influence on mental wellbeing, with bad air quality shown to contribute to poor mental health and unhappiness, and time spent in a natural forest setting resulting in strengthened immunity and reductions in stress, anxiety, and depression.
5. Asia is confronted with rising levels of mental illness due in part to pressures of life, poor nutrition, lack of exercise, increased time on digital media, social isolation, and lack of contact with nature. Levels of mental health professionals are critically low across the region. There is no realistic scenario where these would increase in the coming generation or two. Asian nations are faced with either increasing burdens of mental illness or prioritizing innovative preventive and remediative strategies across all levels of society and age groups that focus on self-managed and evidence-based pathways to mental wellbeing.

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