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Introduction

Historically, lifestyle medicine has focused on the prevention, management, and treatment of physical ailments such as heart disease and diabetes, but there is growing evidence that lifestyle-based strategies can effectively improve mental health and emotional well-being, often at levels comparable to pharmacological intervention. Accordingly, there is an increasing call from outside the lifestyle medicine community to use lifestyle-based strategies for the prevention, management, and treatment of mental health conditions.¹ It is important that lifestyle medicine respond to this call because mental health is one of the major health challenges of our time, evidenced by approximately 1 in 5 people suffering a mental health episode each year² and 1 in 8 adults in the United States taking antidepressant medication each day.³

This article presents the evidence for a variety of lifestyle-based and nonpharmacological approaches for improving mental health and emotional well-being. The strategies presented arise from the lifestyle medicine literature as well as the complementary discipline of

positive psychology, which is a branch of psychology that adopts a strengths-based approach to helping individuals to flourish.⁴

Food Feeds Mood

The symptoms of depression, including low mood with associated low energy levels and a tendency toward social isolation, may be a natural and helpful response to pathogenic exposure as the body responds to “foreign invaders,”

“food-like substances” may evoke depressive symptoms.⁵ Certainly, there is increasing evidence showing a link between diet quality and mental health.⁶⁻⁹

In a study of more than 80 000 individuals from Great Britain, a dose-response relationship was observed between the consumption of fruits and vegetables and happiness, even after controlling for numerous personal, social, and economic factors known to influence emotional well-being.¹⁰ In the

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such as harmful bacteria and viruses.⁵ It has been hypothesized that highly processed foods may also be recognized by the human body as a foreign invader, and as a consequence, the ingestion of

study, consuming approximately 7 to 8 servings of fruits and vegetables a day conferred optimal happiness benefits. To elucidate causality, New Zealand researchers tracked individuals' fruit and

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vegetable consumption and emotional well-being.¹¹ Once again, they found that individuals who ate the most fruit and vegetables reported the highest levels of subjective personal well-being, with about 8 servings daily being ideal. Noteworthy, a causal effect was observed, whereby participants in the study reported feeling happier the day after they consumed higher levels of fruits and vegetables.

The evidence suggests that whole, plant-based foods are most beneficial for promoting positive emotional well-being. Beezhold and Johnston¹² randomized omnivores to a control group (no change in diet), a pescovegetarian diet, or total vegetarian diet for 2 weeks. Only the total vegetarian group (ie, plant-based diet) recorded a significant improvement in their mood. More recently, intervention studies led by Australian researchers have shown a reduction in depressive symptoms through the adoption of a Mediterranean-style eating pattern that emphasized plant foods.^{13,14}

Motion Creates Emotion

Physical activity is arguably the most efficacious and yet underutilized antidepressant. To date, more than 25 studies have concluded that regular physical activity is associated with better mood and the prevention of depression.¹⁵ A recent study involving 15 European countries found a positive association between physical activity level and self-reported happiness,¹⁶ which suggests a dose-response relationship. Furthermore, a study by Cambridge researchers involving more than 10 000 individuals found that not only were more physically active people happier, but they also reported being happier in the moments they were more physically active.¹⁷

Several studies have even shown that exercise is comparable to antidepressant medication for relieving depression.¹⁸⁻²⁰ Whereas more intense exercise, which includes resistance exercise, seems to be particularly effective for improving mood,^{21,22} improvement in mood may be

achieved through a single bout of exercise²³ and within 10 minutes.²⁴

The mood-enhancing properties of physical activity may be mediated through several mechanisms, including the release of β -endorphins²⁵ and neurogenesis within the limbic region of the brain, which is involved in emotion.²⁶ Regardless of the mechanism, physical activity is one of the most evidence-based and effective methods available for promoting and enhancing emotional well-being.

Blue and Green Should Often Be Seen

In a meta-analysis of more than 30 studies, McMahon and Estes²⁷ concluded that exposure to natural environments—blue and green spaces—promotes mental health and emotional well-being. For example, a study conducted in New Zealand found that every 1% increase in the amount of green space within 2 miles (3 km) of an individual's home was associated with a 4% lower prevalence of anxiety and mood disorders.²⁸

The therapeutic benefits of natural landscapes have long been recognized. In 1984, Ulrich observed that hospital patients who had a view of a natural landscape tended to consume less painkilling medication and have shorter hospital stays.²⁹ Subsequently, exposure to green areas has been associated with less aggression and even just a window view of nature is significantly correlated to lower levels of domestic violence.³⁰ Indeed, studies consistently show that people who are more connected to nature suffer less anxiety and anger, and enjoy more vitality and happiness.³¹

With regard to the promotion of mental health, a particularly beneficial aspect of natural environments might be the intensity of light that individuals are exposed to in these spaces.^{32,33} It is well documented that depression is exacerbated in countries of high latitude where there are extended periods of low lighting during the winter months—a condition referred to as seasonal affective disorder, abbreviated SAD.³⁴ Conversely, exposure to bright light is increasingly

being used as a treatment for depression,³⁵ with a recent study reporting light therapy to be more effective for relieving depression than antidepressant medications.³²

Many people today may be exposed to inadequate light illuminance as a result of mostly inhabiting indoor environments, which have comparatively low lighting. Researchers from the University of Colorado reported that, on average, during waking hours individuals were exposed to 13 times greater luminance when winter camping (over 10 000 Lux) as compared with living a typical modern lifestyle that relies mostly on artificial lighting (approximately 750 Lux).³⁶ Protocols for using light therapy for the treatment of depression involve 10 000 Lux for 30 minutes each day, suggesting that these levels are necessary for robust mental health.^{32,33}

Rest to Feel Best

The average person sleeps approximately one-third of their life; however, in modern times, many people have adopted the mandate of Sir Henry Norman, who advised that “the very best way to lengthen the day is to steal a few hours from the night.”

Inadequate sleep is linked to low mood and depression,³⁷ and several studies suggest that inadequate sleep is causal of affective disorders.³⁸ Yoo et al³⁸ showed using functional magnetic resonance imaging that sleep-deprived individuals experience greater activity in limbic regions of the brain when they were shown aversive images, indicating increased emotional reactivity. Similarly, when shown a list of arbitrary words, sleep-deprived individuals were more than twice as likely to remember those words with negative connotations,³⁹ suggesting that the human brain is negatively orientated when sleep deprived.

The deleterious effects of sleep deprivation on mental health are intuitive; yet despite the United States National Sleep Foundation recommending that adults sleep 7 to 9 hours per night,⁴⁰ 30% sleep 6 hours or

less.⁴¹ Arguably, the single biggest contributor to inadequate sleep time is night light pollution, experienced by more than 99% of people living in developed countries; it is noteworthy that the increasing rate of depression over the past few decades parallels the increased exposure of individuals to artificial light at night.⁴²

Prioritizing adequate sleep is important for emotional well-being; however, another important aspect of “rest” is attending to work-life balance. There is evidence that humans display circaseptan (weekly) rhythms in a number of physical and psychological parameters and, as such, may benefit from adhering to a day of rest each week.⁴³⁻⁴⁵ For example, in a 10-year prospective study of a Jewish cohort, Anson and Anson⁴³ found a predictable reduction in mortality on Saturdays, which is the Jewish Sabbath day of rest. The principle of taking a weekly rest day has been an integral component of several faith traditions for thousands of years and may be beneficial in modern times for managing work-life balance and associated well-being. A practice that has been promoted is the observance of a digital Sabbath in which people go offline for a day a week to prioritize real as compared to virtual interaction with others and the environment.⁴⁶

Feelings Follow Focus

Complex neuronal pathways connecting the prefrontal cortex and limbic structures predispose the emotional state of humans to be influenced by what they give their attention to and focus on.⁴⁷ Accordingly, it is unremarkable that ruminating on negative thoughts cultivates anxiety and depression.⁴⁸ Encouragingly, there is growing evidence that exercises that activate positive thought processes about the past, present, and/or future can improve mental health and happiness. Given that at least a third of thought flow during waking hours is undirected,⁴⁹ the importance of intentionally activating positive thought processes is evident.

Within the positive psychology literature, practicing gratitude is one of the most robust strategies used for increasing happiness,⁵⁰ and it has been demonstrated to elicit meaningful improvements in the emotional well-being of children, early adolescents, college students, middle-aged adults, and older adults.⁵⁰⁻⁵² Seligman et al⁵⁰ reported improvements in the subjective personal well-being of individuals for 1 month after they participated in a gratitude visit, which involved writing and delivering a letter of gratitude to someone who was especially significant to them.

The benefits of expressing gratitude have been attributed to amplification of positive memories, and hence positive thought processes, about the past. However, exercises inducing positive reflections about the present have also been shown to significantly increase emotional well-being in the long term. For example, in a study in which individuals were instructed to record 3 things that went well at the end of each day, levels of self-reported happiness progressively increased over a 6-month follow-up.⁵⁰

Finally, engaging in positive thought processes about the future can improve mental health. In a meta-analysis conducted by Alarcon et al,⁵³ it was concluded that having positive expectations about the future—namely, having hope—is protective against depression and stress and promotes happiness.

Giving Is Living

In his book *Darkness Visible*, Styron described severely depressed people as having “their minds turned agonizingly inward.”⁵⁴ In acknowledgement of this observation, it is intriguing that the act of turning the mind outward by intentionally serving the needs of others has been consistently shown to improve happiness, health, and even lifespan.⁵⁵ Indeed, service has even been described as enlightened self-interest, as compared to self-sacrifice, because of the rewards conferred to the giver.⁵⁶ Martin Seligman, a pioneering positive psychology

researcher, has asserted that “doing a kindness produces the single most reliable increase in well-being of any exercise we have tested.”⁵⁷

A study conducted in the United States indicated that volunteering once per week increased the likelihood of people being “very happy” with their lives by the same amount as moving from a personal income bracket of less than \$20 000 to more than \$75 000 per annum.⁵⁸ In another study conducted by Canadian researchers, participants were given money to spend, and the impact on their happiness was recorded.⁵⁹ Intriguingly, a long-term increase in happiness was only observed among those participants who were instructed to spend the money on someone else as compared to themselves. Similarly, service-oriented lawyers report higher levels of happiness than money-oriented lawyers, despite having a much lower income.⁶⁰

Scientists from various fields are converging on the fact that with regard to human well-being, by giving we receive. In an article published in *Scientific American Mind*, the authors concluded, “Our species is apparently the only one with a genetic makeup that promotes selflessness and true altruistic behavior.”⁶¹

A Call to Action

The evidence, based on the strategies presented above, highlights the value of utilizing nonpharmacological approaches for the promotion of mental health and emotional well-being. Recent studies of the effectiveness of a multimodal lifestyle intervention (the Lift Project) that combines the above strategies with other additional lifestyle-based approaches have indicated that, on average, participants experience a 20% improvement in overall mental health in association with a 30% reduction in depressive symptoms, anxiety, and stress.^{62,63} Furthermore, the greatest benefits of the intervention were observed among the participants with the poorest mental health scores at baseline, indicating that the strategies are beneficial even for clinical cohorts.⁶² Whereas

structured interventions like the Lift Project might be the most efficacious method for engaging individuals with the strategies described above, these approaches can also be easily utilized as prescriptions by health professionals and clinicians who treat patients with affective disorders.

In conclusion, many developing countries are facing an escalating rise in affective disorders, and the current treatment paradigm, focusing on pharmacological intervention, is inadequate. In accordance with the mandate of lifestyle medicine to “treat the cause,” there is a need for providers and patients alike to recognize that, as with physical ailments such as heart disease and diabetes, the underlying causation of affective disorders such as depression and anxiety may be lifestyle related. Hence, evidence-based strategies from the fields of lifestyle medicine and positive psychology, including proper nutrition, physical activity, exposure to nature, adequate rest, activating positive thought processes, and engaging in service activities, should be considered frontline therapies for improving mental health and emotional well-being.

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Informed Consent

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Trial Registration

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