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Report: Critical Review of Evidence for Betterspace Pillars

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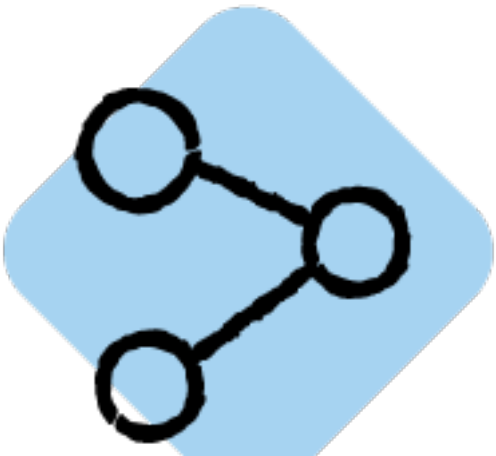

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Introduction

The purpose of this document is to summarize and critically review the published academic and grey literature on mental ill-health and subjective wellbeing and understand the available evidence linking Betterspace's six pillars of wellbeing to improved mental health outcomes. It was commissioned as part of the Evidence and Quality Assurance Project.

Healthy Behaviours and Wellbeing

Everybody knows that to survive we need adequate nutrition, water, shelter, warmth, and physical safety. Less often discussed in medicine - and especially mental health - is the requirement for other fundamental needs, without which physical and emotional health may be elusive.

The provision of high-quality healthcare is crucial for the health of a population. But preventative measures account for a higher proportion of the benefit afforded by living in modern society (Bunker 1995). Behavioural choices and habits are amenable to influence and should be targets for both the prevention and treatment of various kinds of health problems - including mental ill-health.

In this article we are primarily concerned with activities and experiences that promote good health and prevent ill-health. For this purpose, we are focusing particularly on mental health and wellbeing - but these are inevitably related to areas such as physical health, longevity and healthy aging. It is uncontroversial to say that mental and physical ill-health are connected - in fact it could be argued that they are not different at all but just different ways of describing an organism out of homeostasis (Steptoe et al 2005).

The World Health Organization (WHO) defines mental health as "...a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community" (WHO, 2014). The focus here is to explore mental health through the lens of self-reported wellbeing (subjective wellbeing) and the prevention and treatment of depression and anxiety.

For a decade I have been using the framework described herein to help patients to take control of their own mental and physical health. This is the framework that Betterspace uses in its platform. Our framework consists of 'Six Pillars" of health. These are six fundamentals without which health is difficult or impossible - the sine qua non of wellbeing. These pillars are: Adequate Sleep; Movement or Exercise;

Nourishing Social Contact; Purposeful (or Meaningful) Activity; Nutrition; Strategies for Managing Stress; and Altruism or Contributing to Others.

A number of other frameworks and treatments developed over the years use a similar range of factors for understanding wellbeing and have influenced the formation of the Betterspace framework. For instance, all of the areas we describe are cited, in one form or another, in the World Happiness Report (Helliwell et al 2012) as key determinants of wellbeing. The framework is greatly influenced by the categories identified by Marie Jahoda's theory of Ideal Mental Health which was the forerunner of Wellbeing Therapy (Fava et al 1998) and the work of Carol Ryff on wellbeing, positive health, and resilience. It is also influenced by ideas from evolutionary biology (see principles of Mismatch, Defenses, Plasticity, and Cultural practices in Grunspan et al 2017) - that is to say: what environment are our bodies evolved for? And how can we approximate that environment?

We are not primarily concerned here with the psychological processes addressed in many forms of traditional, cognitive, and third-wave psychotherapies. We are concerned with lifestyle behaviours - or behavioural habits - which promote good health and wellbeing. We are also not primarily concerned with the context within which the individual resides: the physical, economic, political, social, and environment surroundings; the experience of discrimination, trauma, violence, and abuse. All of these things of course are fundamentally important to health and wellbeing. Our focus here is on our body (with a focus on the brain) and what kind of lifestyle it needs to thrive. We have also not included economic analyses of the individual pillars but note that, among much other work, the report "Economic analysis of workplace mental health promotion and mental disorder prevention programmes" funded by the Health Program of The European Union (2013) concluded that workplace interventions to improve employee mental wellbeing had benefit-cost ratios of up to 13.62. The highest returns were exercise programs and employee and line manager education - both integral parts of the Betterspace platform.

We note that there is considerable overlap between some of the principles underlying these areas. For instance, there is considerable evidence that exercise and social connection reduce stress. Or that regular exercise is likely to promote greater interpersonal connection.

Another overarching theme of our Six Pillars framework is that we wish to promote a shift to an "internal locus of control" or increased self-efficacy[1], especially as it

[1] Self-efficacy refers to a person's ability to exert influence over events in their lives. It is believed to be a key mediator of wellbeing.

pertains to one's sense of wellbeing. The very idea that one might be depressed, and the attendant stigma, interferes with an individual's willingness to seek traditional treatments (Farmer et al 2012) - thus a platform framed as being preventative for ill-health generally is likely to be more palatable and more likely to be used. In a sense this means educating people and empowering them to improve their health and subjective wellbeing by changing the question from "Why are you sick?" to "Why would you be well?"

This is not a systematic review of the literature but rather a critical review of the most up to date and relevant research that has been done in these areas.

Some notable areas in a similar vein we do not explore here but which are also of great importance are: exposure to nature, values, personality factors, religion and spirituality, poverty, personal experience and trauma, disease and the experience of discrimination. Some of these - for example exposure to nature - are related to our pillars indirectly. We believe that others are vitally important but beyond the remit of this report which is primarily for the purpose of providing a rationale for the activities, solutions, and communities that we can help people access through our platform.

Prevention of illness or improved wellbeing?

We are focusing here on wellbeing generally but much of the research on effective treatments views psychological health and mental wellbeing through the lens of depression. And there is good reason for this - as Bloom and colleagues (2011) report: "Globally, the effect of depression on aggregate economic output is predicted to be US$5.36 trillion between 2011 and 2030". It should be noted that much research conceptualises depression as a 'score above X' on a questionnaire[2]. This conceptualisation of mental disorder is flawed and mental illness or disorder means something different from scoring above a threshold on a questionnaire (scoring high on a distress scale, however, is a reasonable proxy for ill-health or reduced wellbeing). For our purposes both concepts are valid if the question is "How can we improve wellbeing and reduce ill-health".

[2] Rather than through the use of a clinician interview or gold-standard diagnostic instruments such as a semi-structured interview.

The Pillars

Rationale for the Pillars

We believe that much of the confusion around mental health disappears when we remind ourselves of a simple fact: we are animals. And we have certain needs: the need for movement and sleep to allow critical biological functions; the need for connection with other people (or other mammals) for a variety of biological, emotional, and psychological needs, the need for engaging activity to promote purpose, reward, and prevent rumination[3]; the need for adequate and high-quality nutrition, the need for an other-focused or altruistic purpose; and the need to be able to countervail the corrosive effect of chronic stress.

Another way to consider these behaviours is: What environment are we evolved for and how does it differ from the one we (WEIRD[4] people at least) find ourselves in?

We believe that many of our pillars are under-recognised in medical practice, research, and public discourse. Note that the WHO definition of mental health cited above explicitly makes mentions of coping with stress, productive work, and community - three of our pillars. Sleep is increasingly recognised as fundamental to mental health. In fact, treating insomnia alone in depressive illness can be as effective as treating the illness itself (see below). Exercise and social connection too are increasingly being identified in treatment trials and population-based studies as key factors in the promotion of wellbeing and in the prevention of illness.

Thinking about your wellbeing in this way is a powerful reframing of experience. You can come to the understanding that unpleasant or aversive experiences, while they are painful, may be fundamentally important and there to help you survive and thrive. Sadness and loneliness serve as a powerful impulse to connect you to others. Anxiety may be telling you that you have been avoiding something you need to be doing to survive or thrive. Stress may be telling you that you need to rest.

Finally, the one pillar that may be a little different from the others is Helping Others as it relates less obviously to the body. This principle was included as we believe it is vitally important to build into any healthcare philosophy a mechanism for extending the benefits beyond the individual - a mechanism for increasing the sphere of influence. One might draw on the analogy of herd immunity in

[3] So far as we know, animals don't ruminate - except cows - but that's a different kind of rumination.
[4] WEIRD: Western, Educated, Industrialized, Rich, and Democratic.

vaccination - the more people who are educated in these principles, the more good health behaviours are likely to propagate through the community.

Methods

Unless otherwise stated, included studies are systematic reviews and meta-analyses, epidemiological studies, or large cohort studies. Preference is given to systematic reviews published more recently as they include more studies and use more sophisticated methodology. Initial search was done through Google Scholar and Pubmed using the timeframe 2015-present. Where research is of particular relevance but outside this timeframe, we have included it. Also included are data from treatment guidelines from internationally recognised medical bodies and (the very limited) research on patient perspectives. Other sources include reference lists of key papers, grey literature (e.g. government reports), and "Snowballing" (snowballing refers to using the reference list of a paper or citations to the paper to identify additional papers).

Sleep

Sleep is a fundamental requirement for effective physiological processes. Sleep disruption is associated with mental disorder including alcohol abuse, depression, anxiety disorders, and psychosis (Hertenstein 2018), an elevated bodily stress response, acute and chronic physical symptoms, cognitive and performance deficits, reduced quality of life, cardiovascular disease, obesity, and premature death (Medic 2017).

Association Between Insomnia and Depression

Up to a quarter of people globally suffer from insomnia[5]. In 74% of these people insomnia persists for a year at least (Morin 2009, Stranges 2012). Thirty seven percent of Americans rate their sleep as "fair" or "poor" (National Sleep Foundation Sleep Health Index Quarterly Report 2017). Other studies with 100% recruitment rates and random sampling have found rates of insomnia as high as 48% in some populations (Quera-Salva et al 1991).

Data from a large prospective population-based study comprising a total of 24,715 people provides evidence of a bidirectional relationship between depression and insomnia. That is to say that insomnia predicts depression at a rate 6.2 times higher and depression predicts insomnia at a rate of 6.7 times higher than the general population (Sivertsen et al 2012).

Treating sleep problems prevents the progression from insomnia to depression. One estimate of the magnitude of this effect suggests that effective treatment of insomnia could prevent 47% of new-onset depression (Eaton 1995).

Effective Treatments for Insomnia

CBT for Insomnia

There is abundant evidence that CBT for insomnia (CBT-I) is effective and that effects persist beyond the period of treatment (Trauer et al 2015). It is recommended as the first line treatment for chronic insomnia by the American College of Physicians (Qaseem 2016). Treating insomnia in depression is as effective as treating the depression directly and may mediate the improvement in depression symptoms (Cunningham et al 2018). Internet delivered CBT-based

[5] Insomnia refers to the severe end of the spectrum of sleep problems. The American Academy of Sleep Medicine defines it as "The subjective perception of difficulty with sleep initiation, duration, consolidation, or quality that occurs despite adequate opportunity for sleep, and that results in some form of daytime impairment."

treatment strategies for insomnia are as effective as face-to-face CBT according to systematic review evidence of trials including 2,392 participants (Seyffert 2016).

Other Non-pharmacological Treatments for Insomnia

The practice guideline of the American Academy of Sleep Medicine also recommends as effective other behavioural strategies for the treatment of insomnia including stimulus control therapy, relaxation training, sleep restriction, multicomponent therapy (a combination of these strategies without cognitive therapy), paradoxical intention, and biofeedback (Morgenthaler 2006).

Mindfulness-based interventions for insomnia (including mindfulness meditation, mindfulness-based stress reduction, and mindfulness based cognitive therapy) are not as consistently effective as CBT-I though there is systematic review evidence for their effectiveness with large effect sizes for sleep quality (Wang 2018).

Exercise

Like sleep, regular physical activity is a requirement for optimal physiological processes (Silverman & Deuster 2014). Habitual exercise blunts the physiological stress response and promotes neuroplasticity (Dishman et al 2006). The body, we seem to have forgotten over the millennia, has evolved to move. It is a movement machine. But we spend our days lying and sitting. Sitting, it has been said, is the smoking of our generation. The Academy of Royal Colleges in the UK has termed exercise "The Miracle Cure" (Academy of Medical Royal Colleges 2015). In head-to-head trials of exercise vs antidepressants, exercise is as effective and greatly increases the effectiveness of medication (Netz et al 2017).

Lower levels of fitness are associated with an almost two-fold increase in the risk of new depressive illness (Schuch et al 2016). Regular exercise is also associated with up to a 40% reduction in the rates of incident depression. While these associations do not prove that lack of exercise is the cause of the depression, there is considerable evidence that exercise both prevents, and is an effective treatment for depression, with moderate to large effect sizes.

Reviews of studies on the effect of exercise in severe mental illness also conclude that there is a large and significant effect on schizophrenia symptoms (Rosenbaum et al 2014, Firth et al 2015), functioning and quality of life (Dauwan 2016) and cognitive function (Firth et al 2016).

Prospective Studies of Incident Depression and Its Relationship to Exercise

Meta-analysis of prospective cohort studies including 266,939 participants (Schuch et al 2018) followed up for an average of 7.4 years concluded that high levels of physical activity are associated with a 17% reduction in future depression risk. In an attempt to solve two potential sources of bias - the inaccuracy of self-report and reverse causality - Choi and colleagues (2019) used techniques from large scale genetic analysis on a cohort of 611, 583 participants and concluded that objectively (accelerometer) measured physical activity was associated with a 26% reduction in the risk of developing depressive illness.

Systematic Reviews of Randomized Controlled Trials of Exercise for the Treatment of Anxiety and Depression

Resistance Training in Depression

Gordon and colleagues' (2018) review of randomized controlled trials (RCTs) which assessed resistance training as a treatment for depressive illness included 1,877 participants and found a significant reduction in depressive symptoms with a moderately large effect size.

Aerobic Exercise in Depression

Schuch (2016) and colleagues' systematic review including 1,487 participants concluded that exercise, whether supervised or unsupervised, had a large positive effect on depressive illness. The largest effect size was for aerobic exercise. Even among people with depressive illness severe enough to be attending mental health services, reviews of RCTs conclude that aerobic exercise has a significant and large beneficial effect on depression (Morres et al 2019).

Exercise in Anxiety and Anxiety Disorders

The meta-analyses of the effect of exercise in the treatment of anxiety disorders include smaller numbers of participants and studies of poorer quality than those for depression (Stonerock et al 2017). There is evidence for an immediate anxiety-reducing effect of exercise on state anxiety (Ensari et al 2015). Exercise is an effective treatment for a range of anxiety disorders (Stubbs et al 2017). A meta-meta-analytic study (Rebar et al 2015) including 13,922 participants concluded that the beneficial effect of exercise on milder symptomatology (i.e. non-clinical populations) may be greater for depression than anxiety symptoms.

Lifespan Effects

The principles are the same across the lifespan. Frailty, a state of physiological vulnerability, is strongly associated with depression in the elderly. A systematic review incorporating 15,690 participants concluded that the most effective interventions for improving frailty scores were those incorporating physical exercise with dietary protein supplementation (Travers et al 2019). Accelerometer data from a US national cohort study of 7,999 adults over the age of 45 years reveal that moderate to vigorous physical activity is associated with a 35% reduction in mortality rate (Diaz et al 2019).

Connection

Social Support, Social Networks, Social Connectedness, and Belonging

We now know that social isolation and loneliness are as important a risk factor for disease and mortality as smoking, obesity, and lack of exercise (Holt-Lunstad et al 2015). There is also now substantial cross-sectional evidence for a connection between loneliness, or perceived lack of social support, and mental disorders (Santini et al 2015). Loneliness is also associated with poorer outcomes in people who have depression (Wang et al 2018). Those with mental disorder are almost eight times more likely to be lonely than those without (Meltzer et al 2013). The perception of the quality of relationships and community engagement (conceptualized as social capital) is also protective against mental ill-health (Ehsan & De Silva 2015). While there are fewer longitudinal studies, some support this relationship. For instance, a nationally representative sample of 11,065 people followed over six years (Teo et al 2010) reveals that depression is independently predicted two years later by the frequency of in-person contact with other people (whether they are friends or family) in a dose-dependent fashion. Fairly consistently, large social networks, as well as connection with close friends and family, are most protective.

<u>Factors related to better mental health:</u>

- Perceived Social Support (vs. perceived lack of support)
- Social Networks (large and diverse)
- Social Connectedness (vs. isolation)
- Satisfaction with Relationships (vs. loneliness)
- A Sense of Belonging (vs. alienation)

Even the effects of psychotherapy may fundamentally be the result of the connection between the therapist and the client as argued by many. "It is the relationship that heals" as Irvin Yalom, famous psychotherapist and author, exclaims (Yalom 1989).

In the UK, The Loneliness and Social Isolation in Mental Health Network[6] and in Australia, the Australian Coalition to End Loneliness[7] aim to produce research and provide resources to address this major public health problem. The leading

[6]https://www.ucl.ac.uk/psychiatry/research/epidemiology-and-applied-clinical-research-depa/projects/loneliness-and-social-isolation
[7]endloneliness.com.au

researchers in the area have called for social connection to be a public health priority (Holt-Lunstad et al 2017).

Interventions Relating to Social Connectedness

Despite the substantial evidence that these factors are important in getting well and staying well it has been difficult for researchers and practitioners who work in a biomedical framework to successfully implement solutions (Mann et al 2017). This may be because the nature of social relationships does not lend itself to intervention by a clinician (or other professional) and so many interventions have not been tested properly. Community interventions are also difficult to assess using randomized controlled trials. Many of the social determinants of health require political and large-scale action to address isolation, inequality, and poverty and these often cannot be modified at scale at the individual level.

The evidence is limited that peer support interventions - i.e. support from other people who have experienced the same illness - are effective in severe mental illness (Lloyd-Evans, et al 2014). Systematic reviews of volunteer befriending in mental and physical ill-health have been inconsistent - it is not clear that they have substantial positive effects on depression, though there does seem to be some small effect on patient-reported outcomes (Siette et al 2017; Mead et al 2010). Social prescribing is the model which most closely resembles our approach and, while there is much hope, systematic review evidence has yet to demonstrate its effectiveness (Bickerdike et al 2017).

There is systematic review evidence that interventions promoting shared social activities in the workplace improve individual wellbeing and performance (Daniels et al 2017).

There are a number of interventions which are effective in improving loneliness. The interventions which have the largest effect size are those which use cognitive approaches to address maladaptive social cognition (Masi et al 2011) and supported socialisation to address objective social isolation (Ma et al 2019).

Meaningful Activity

Box 1. What do we mean by Meaningful Activity?
We are referring to any activities which provide any or all of the following: ● Meaning or Purpose ● Learning and Mastery ● Enjoyment ● Solving Problems ● Creativity/Creation ● A Sense of Accomplishment or Reward ● Meaningful Employment

Behavioural Activation

One way of understanding common mental disorders - especially depression - is that feelings of happiness and wellbeing result from engaging in enjoyable and rewarding activities. Early investigators studying cognitive behavioural therapy treatments for depression found that the behavioural component was sufficient to lead to reduction in symptoms and remission of depression (Jacobson et al 1996). This led to the development of Behavioural Activation Treatment (BAT). As described in an early treatment manual by Lejuez and colleagues (2001) - BAT "is designed to increase exposure to the positive consequences of healthy behavior, thereby increasing the likely reoccurrence of such behavior and necessarily reducing the likelihood of future depressed behavior". And there is good evidence that this is the case. Behavioural activation is as effective as cognitive behavioural therapy and is also less expensive (Richards et al 2016). While adequate training of CBT therapists takes 1-2 years, training in BAT takes as little as five days.

As mentioned above, Behavioural Activation Treatment is predicated on a behavioural model of depression - that is to say that it draws attention to the fact that engaging in enjoyable or productive activities leads to a sense of wellbeing and improved mood, thus further encouraging the behaviour. Another important principle is that activity often precedes motivation. There is a widespread misapprehension that we must feel motivated in order to do something - Behavioural Activation proposes that scheduled activity leads to reward which increases the likelihood of motivation and further action.

"Anti-ruminative Activity"

Rumination, or negative self-focused attention, is strongly related to depression and anxiety and to the persistence of symptoms and is a transdiagnostic

aetiological factor in multiple common mental disorders (McLaughlin et al 2011). Attentional focus on other behaviour - such as meditation or meaningful activity - brings the attention away from rumination and may alleviate the corrosive effect. Stephen Ilardi (2009) conceptualises engaging activity as "anti-ruminative activity". There are differences in thinking styles between happy and unhappy people. Happy people tend to dwell and over-think less. There is evidence that when unhappy people are distracted by engaging activity their thinking styles and behaviour become just like happy people (Abbe et al 2003).

One of the attractive features of behavioural activation, or otherwise encouraging people to engage in rewarding activity, is that it is agnostic to what the activity is. People vary as much with respect to what activities they find interesting and enjoyable just about as much as they vary in any other way. We believe that one of the unique selling points of the Betterspace model and platform is the awareness of this fact - and the awareness that people need a wide variety of different techniques and activities within the framework of The Pillars to find the things that work for them. This need for variety was borne out in our recent pilot: of 214 resources available, 124 were used (by 50 people). This is consistent with the literature on happiness which has identified person-activity fit as one of the moderating influences on whether a particular wellbeing activity influences a person's happiness (Layous & Lyubomirsky 2014).

Meta-analysis of 26 randomized controlled trials including 1524 participants (Ekers et al 2014) concluded that BAT is effective in the treatment of depression with a large effect size. In older adults there is systematic review evidence that behavioural activation reduces depression symptoms in both the short and long term (Orgeta et al 2017). There is also similar evidence for children and young adults, though there are few high-quality studies in this group (Tindall et al 2017). There is encouraging preliminary evidence that smartphone-assisted behavioural activation may be as effective as face-to-face treatment (Ly et al 2015, Huguet et al 2018).

Purpose and Eudaimonic[8] Wellbeing

Meaning here may also refer to purpose. In recent decades, as a slavishly biomedical view of depression has failed to lead to treatments that have been able

[8] Eudaimonic wellbeing refers to the idea of personal flourishing and living up to one's potential - as opposed to hedonic wellbeing which refers to the pursuit of pleasure.

to turn the tide of mental ill-health[9], there has been a renewed interest in viewing individuals in terms of positively framed phenomena such as wellbeing (Fava 1998), or purpose (Ryff 2017) rather than in terms of illness states. Evidence from a large cohort of 5,566 individuals followed for ten years reveals that lower eudaimonic wellbeing increases the risk of depression more than seven-fold (Wood 2010) - or put another way, higher levels or purpose and engagement reduce the risk of depression seven-fold. A higher subjective sense of life purpose is also associated with better physical functioning over a four-year follow up (Kim et al 2017) and lower rates of cognitive decline (Kim et al 2019) - the latter study a six-year follow up of 11,557 adults over 50 years of age.

Creative Arts Interventions

Creative arts interventions have been deployed successfully to treat depression and other mental disorders. There is systematic review evidence for dance, music, and art therapies to reduce depression and improve quality of life across age groups (Dunphy et al 2019).

[9] In an interview with Wired in 2017, Tom Insel, former head of the National Institutes of Mental Health said: “I think $20 billion—I don’t think we moved the needle in reducing suicide, reducing hospitalizations, improving recovery for the tens of millions of people who have mental illness…”

Nutrition

In the words of The International Society for Nutritional Psychiatry Research: We are “overfed and undernourished” (Sarris et al 2015). We have been aware for a very long time of the association between diet and disease and mortality - despite guidelines suggesting what types and proportions of foods we should eat, diet is reported to be suboptimal in virtually every region worldwide. Suboptimal diet is also responsible for more deaths than any other risk factor (Afshin et al 2019). In the past decade we have become increasingly aware of the association between diet quality and nutritional supplementation, and mental health.

Sophisticated analysis of physiological responses to different types of macronutrients have upended traditional views of nutrition and suggest that modifiable factors such as macronutrient composition, microbiome, and meal timing are crucial (Berry et al 2020). There is an increasing recognition that there is no one-size-fits-all diet that works for everyone. This is likely to be the case as it pertains to psychological and emotional health as well as it pertains to weight control and diet-related non-communicable diseases.

Nutrition may be associated with mental ill-health through direct or indirect causal mechanisms such as immune, metabolic, microbiome-gut-brain axis, or directly nutritional pathways (Sarris et al 2015). The investigations outlined below consider such factors as diet quality and specific types of diet thought to be more healthy - for example the Meditarrenean diet, diets with lower inflammatory indices - as well as specific dietary supplements such as probiotics and omega-3 fatty acids. In general, these diets have higher high-quality plant-based nutrition, and protein sources and are less homogenous than typical western diets whose foodstuffs are sourced from industry (Jacka 2017). We will not consider clinical macro- or micronutrient deficiencies - which also may be associated with psychiatric and neurological illness.

The data come from cross-sectional association studies, prospective observational studies, and meta-analysis of prevention and treatment studies.

Prospective and Cross-sectional Studies

There is systematic review evidence of an association between higher quality diet and better mental health in children and adolescents (O’Neil, et al 2014) and meta-analysis of prospective studies finds that higher-quality diet is associated with subsequent lower depression scores (with an odds ratio ranging between 0.64 to 0.78) (Molendijk et al 2018).

Wang and colleagues' (2019) meta-analysis of the association between dietary inflammatory indices and depression reported a 25% increased risk of depression in those eating a pro-inflammatory diet in prospective cohort studies, and a 16% increased risk in cross-sectional studies.

Treatment and Prevention Studies

Dietary Improvement

Meta-analysis of RCTs reveals a significant effect of dietary improvement on depressive illness (Hedges' g = 0.275), but not for anxiety disorders (Firth et al 2019).

Meta-analysis of the use of high-quality diets reveals significant reductions in new cases of depression - especially the use of a Meditarrenean diet and diets with lower inflammatory indices (Lassale 2019).

Omega-3 fatty acids

Early systematic reviews of the use of Omega-3 fatty acids in the treatment of depressive illness revealed mixed results. More recent meta-analysis and meta-regression of RCTs reveal an effect size (0.398) in the same range as that found for antidepressants (Mocking 2016).

Meta-analysis of the use of Omega-3 fatty acids in the treatment of clinical anxiety revealed significant effects with an effect size of 0.374 (Su et al 2018).

Probiotics

Multiple recent meta-analyses of the use of probiotics in depression have found significant effects both in the treatment of depression and improving mood scores in healthy populations (Ng et al 2018; Huang et al 2016; Liu et al 2019). Ng et al (2018) reported an effect size of 0.684.

Contributing to Others

Altruism, Otherishness, Self-transcendence, and Herd Immunity

There is a rich philosophical tradition promoting the virtues of altruism (e.g. Midlarsky 1991). Other frameworks exist for examining similar concepts. For example, self-transcendence (Reed 1991) refers to a psychological and behavioural focus beyond the self - such as a focus on others and the environment rather than inward focused concerns. The idea that helping others is good for oneself and good for society has tremendous face validity. Beyond these facts we believe that there is an irresistible moral and ethical argument for promoting altruistic behaviour even as it serves to improve one's own wellbeing. As Stephen Post (2005) emphasises: "...a positive vision of public health must nurture benevolent affect and helping behavior.".

Proposed reasons for benefit to the altruistic individual (Midlarsky 1991):

- Social integration
- Sense of competence and usefulness
- Increased positive mood
- Sense of meaningfulness and value
- Distraction from one's own troubles

A philosophy of mental health which promotes not just individual wellbeing but other-focused and altruistic behaviour also has as its aim the dissemination of good health and good health behaviour throughout the population and the prevention of spread of ill-health. In this way it is analogous to the idea of Herd Immunity, a form of protection from disease that occurs when a critical mass of a population is immune to a given infection.

Acts of Giving and Kindness

There is experimental and real-world evidence that spending on others instead of oneself is associated with better mental health (Dunn et al 2008). Acts of kindness to others, as opposed to the self, are also associated with better mental health and positive emotions (Nelson et al 2016). In longitudinal studies too there is evidence that personal goals with a focus on compassion towards others, rather than "self-image" goals predicted a range of improved mental health outcomes (Crocker et al 2010).

Volunteering

While "Contributing to Others" does not solely refer to volunteering, there is systematic review evidence from cohort studies that volunteering (including environmental volunteering) is associated with improved longevity, depression, life satisfaction and wellbeing as well as randomised controlled trial evidence of improved wellbeing (Jenkinson et al 2013). It does however appear that when helping becomes burdensome that the mental health benefits reduce or even reverse - this latter finding is consistent across a wide body of research.

The Environment and Climate Change

Anthropogenic climate change represents a potentially devastating prospect for life on earth (Allen et al 2019). A report from the American Psychological Association and ecoAmerica (Clayton et al 2017) sets out the case for the damaging health effects of climate change on individuals and populations. It highlights evidence that, in addition to results that suggest that the very fact of climate change (and government inaction) erodes mental health, there are direct effects on emotional wellbeing and rates of mental disorder.

The report also outlines evidence that solutions which address climate change are beneficial for mental health, both through direct and indirect mechanisms: Commuting by bicycle or walking improves physical health, subjective wellbeing, and cognitive performance; public transportation improves community cohesion and reduces pollution; green spaces have multiple mental health benefits; clean energy improves physical and mental health.

Educating people about these connections and providing engaging and purpose-driven activities and solutions is therefore likely to improve community engagement, a sense of autonomy, and mental and physical wellbeing.

Stress Management

The Effects of Stress and Burnout on Health

There are many definitions of stress. The one that is most coherent and closest to both the scientific and lay meaning of the word is: anything that pushes an organism out of homeostasis. This definition most obviously refers to things we usually understand as stressful - overly demanding work, abusive relationships, trauma, bereavement - but a careful reading also reveals other important stressful stimuli (or stress from the absence of stimuli). For instance, an unhealthy diet is stressful, a sedentary lifestyle is stressful, lack of good quality sleep is stressful, loneliness is stressful, absence of meaningful activity is stressful. These causes of stress presuppose solutions which are covered in our pillars (with the exception of nutrition for the time being) but other specific strategies for addressing stress or the resulting distress are covered under the umbrella term “Stress Management”.

There is no doubt that stress, stressful life events, and trauma contribute to the development of mental and physical ill-health as well to huge costs for workplaces and society. Stress is a major public health concern. We are evolved for short periods of stress, but we are routinely exposed to long periods of stress and adversity. Stress is not necessarily harmful and may be necessary for growth. The harmful effects are consequent upon both the psychological attitude to short term stress, and the chronic health effects of long-term stress.

What does it mean to treat stress or manage stress?

We consider here a selection of classes of interventions routinely used to manage stress, reduce symptoms of stress, depression and anxiety, and prevent the onset of depression: CBT-based strategies; third wave psychotherapy and mindfulness-based strategies; alternative therapies; and stress-management education/psychoeducation.

Strategies Proven to Manage Stress and Reduce Depression

CBT-Based

Meta-analysis of online and computerized interventions for stress shows significant effects. Those that are of medium duration and use CBT or third-wave cognitive therapies having the largest effect sizes (Heber et al 2017).

Third Wave Psychotherapy and Mindfulness-Based Strategies

Mindfulness-Based Stress Reduction (MBSR) is effective with a large effect size in managing stress in healthy populations (Khoury 2015). Meta-analysis of online mindfulness programs reveals a significant and medium to large effect size for improvement of perceived stress scores (Jayawardene et al 2017).

Alternative Therapies

Systematic review and meta-analysis of a variety of interventions termed "meditative movements" (Zou 2018) finds that these interventions, alone or in combination with other treatments, improve treatment remission rate from depression by a factor of 6.7.

Massage is a good example of a therapy that is almost wholly ignored in medicine but embraced enthusiastically by consumers - in the US the massage industry is worth $16 billion annually (IBIS World Industry Report 2017). In a high-quality meta-analysis of massage for pain in the general population, Crawford and colleagues (2016) found that while massage was effective for the treatment of pain, it also has a moderately large effect on anxiety. In meta-analysis of the effects of massage therapy, the largest effect sizes are for depression and anxiety symptoms (Moyer 2004).

Education

While difficult to study due to a great deal of heterogeneity in what researchers mean by "psychoeducation", there is evidence from systematic review that educating patients (Tursi 2013) and their families (Brady et al 2017) improves clinical course, patient functioning and carer wellbeing in depressive illness. Psychoeducational interventions in general are effective (with a small effect size) in managing stress (Van Daele 2012).

Burnout

In the workplace, structural or organizational strategies aimed at reducing burnout (as opposed to stress) seem to be more effective than individual-focused interventions (e.g. West et al 2016).

Perspectives of those in recovery

There is a shocking lack of research into patient perspectives on how they prevent and recover from depression and other mental disorders (Cuijpers et al 2011). What limited evidence there is (van Grieken 2017) reveals that people identify (in addition to professional help and searching for causes in their own lives) a virtually identical selection of categories to the ones we have elaborated here. Among the top 15 most used and most helpful self-management strategies identified are the following: “Making sure you have a good day/night rhythm”; “ Engaging in moderate physical activity (cycling, walking etc.)”; “Engaging in leisure activities”; and “Finding strategies to create pleasurable distractions”.

Online and Computerised Interventions: cCBT, behavioural activation, psychoeducation, mindfulness, and "self-help"

Some of the interventions we promote are online or computerised, and there is mounting evidence that these are effective and safe. There is systematic review evidence for the effectiveness of online interventions for the prevention of anxiety and depression (Deady et al BMC Psychiatry 2017). The studies included in this meta-analysis used a variety of approaches including emailed self-help, CBT, and acceptance and commitment therapy strategies.

Meta-analysis shows that web-based psychoeducational strategies - especially those which include active, interactive elements - are effective at improving mental health literacy (Brijnath 2016) and reducing stigma (Mehta 2015).

Extensive meta-reviews and meta-analyses (Bellon 2014) covering studies including 56,158 participants revealed that 75% of included studies of psychological and/or psychoeducational interventions were effective in either reducing depressive symptoms or preventing the development of depression.

Meta-analysis of self-guided internet-based CBT for the treatment of depressive symptoms and depressive illness also demonstrates effectiveness (Karyotaki 2017).

Meta-analysis of online mindfulness programs reveals a significant and medium to large effect size for improvement of perceived stress scores (Jayawardene et al 2017).

Summary

As the famous aphorism from the World Health Organisation goes: health is not merely the absence of illness. Our philosophy is that improved wellbeing and prevention of ill-health is everyone's responsibility. We believe people are ready to be empowered to take control of their health.

The virtually endless variety of human nature requires similar variety in terms of the range of solutions, strategies, and resources which will help people stay healthy, prevent ill-health, and thrive. We have built a product which allows people to understand their health within a simple, intuitive, and evidence-based framework but which also allows for the delight of exploration and the variety required to find what works best for them.

We have described an extensive literature demonstrating the effectiveness of strategies which educate, help, and encourage people to get better quality sleep, to exercise regularly, to find and maintain nourishing relationships, to manage stress, to improve nutrition, to contribute to others, and to engage in rewarding activities. These strategies improve wellbeing, prevent ill-health and effectively enhance the treatment of ill-health when it appears. Our aim is to empower and educate people in these principles and allow them in turn to empower and educate others.

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