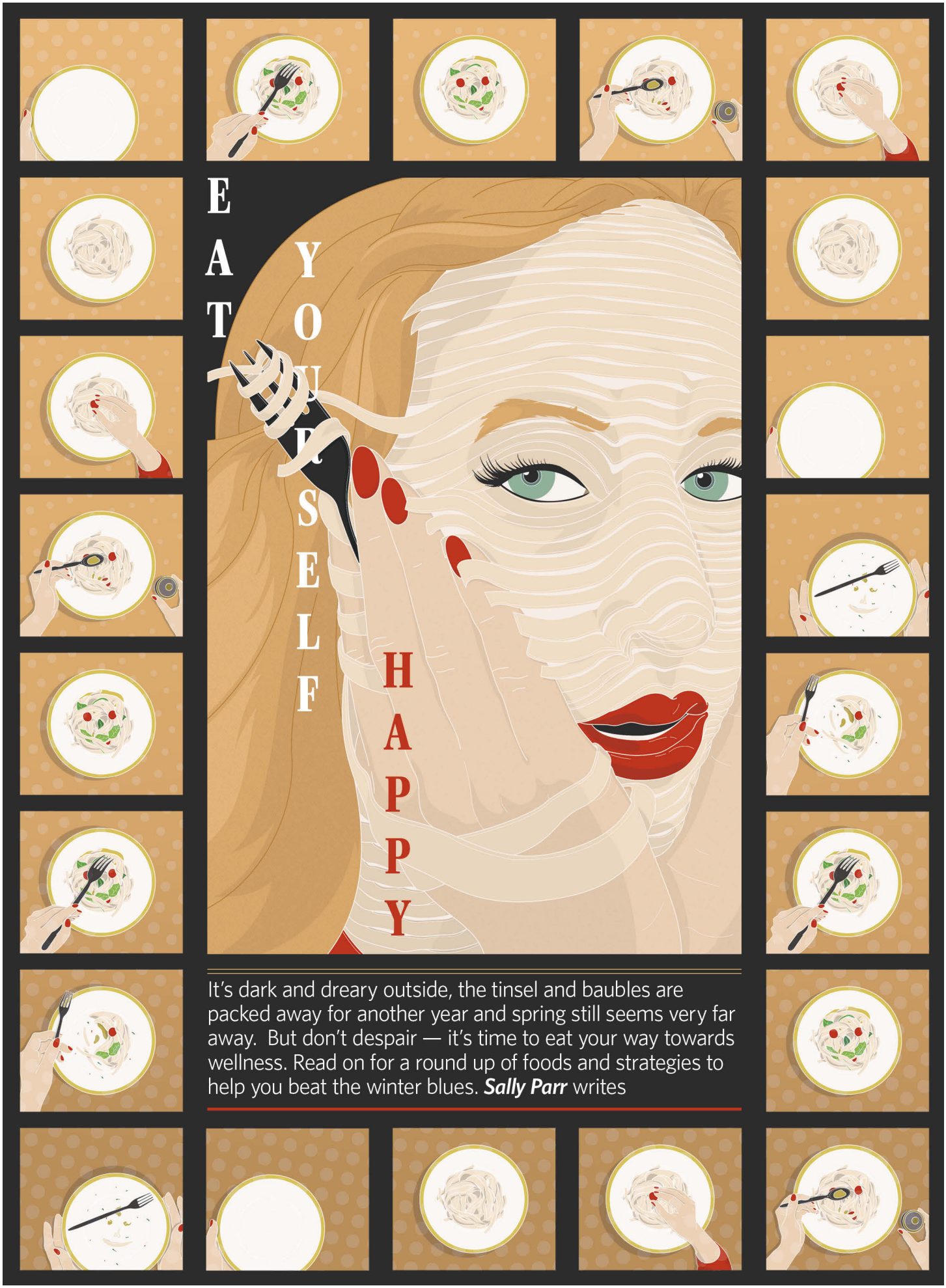

It's dark and dreary outside, the tinsel and baubles are packed away for another year and spring still seems very far away. But don't despair — it's time to eat your way towards wellness. Read on for a round up of foods and strategies to help you beat the winter blues. ***Sally Parr*** writes

If the depths of winter have left you feeling low, you are not alone. Last year, NHS Digital figures revealed that an estimated one in six people in the UK experiences common mental health problems during an average week.

Symptoms can differ from person to person, ranging from what may just feel like the winter blues all the way through to an inability to function on a daily basis. Whatever the symptoms, it is important to tackle them or seek help, rather than just hoping they'll go away.

Looking to nutrition and lifestyle is a great place to start, but it's important to discuss the risks and benefits with a registered nutritional therapist or your GP, and never stop taking prescribed medication without consulting your GP. Here are some smart strategies to get you started:

Eat for gut health

Diverse gut bacteria has been linked positively to mental health, with several types of 'good' bacteria thought to interact with the nervous system and play a key role in mood management. Some microbes even help with production of dopamine,[1] the so-called 'happy hormone'.

Probiotic foods, which are generally fermented foods such as live yoghurt, provide beneficial bacteria that can help support digestive health and regulate the immune system. Some studies have also found them to be useful in tackling anxiety.[2]

Scientists call these "psychobiotics" — probiotics that can be used to positively impact mental health by altering the way the gut communicates with the brain. It's thought that in depression, certain messages don't get through from the gut to the brain. In one study, researchers who noted a correlation between imbalances in gut bacteria and disorders of the central nervous system found improved mental health in healthy volunteers who consumed probiotic yoghurt and supplements for six weeks.[3] However, whilst acknowledging that the study showed promise, the authors recommended that further studies into psychobiotics were needed to explore the findings further.

Good sources of probiotics include dairy produce such as yoghurt with live cultures, buttermilk and kefir. The latter is thought to act as a transport system for other probiotics, as well as having antifungal, antibacterial and anti-inflammatory properties.[4] Other fermented foods that are a good source of probiotics include tempeh, natto and miso made from soya beans; sauerkraut and kimchi from cabbage; plus kombucha from tea. The fermentation process produces beneficial bacteria that enable nutrients to leach from the food structure, making them more easily absorbed when we consume them. Eating foods that are rich in fibre also helps to feed your beneficial bacteria, which is another reason to make sure you are including vegetables, fruit, legumes and wholegrains in your diet.

Eat 10 a day

Several studies have linked a colourful, varied diet that includes vegetables, fruit, wholegrains and omega-3 fatty acids with good mental health. The standard western diet, however, including highly-processed foods, low levels of vegetables and fruit, and high levels of omega-6 fatty acids, has been linked with low mental health. Because high levels of general inflammation are often seen among patients with depression, it's also thought that the anti-inflammatory and antioxidant properties of a plant-rich diet can help to support mental wellbeing.

SMASH it

In one study, researchers set out to see whether a plant-rich, Mediterranean style diet could improve mental health.[5] Their hypothesis was that low levels of omega-3 fatty acids, higher levels of systemic inflammation in the body and nutritionally poor diets were common features in poorer mental health. Participants were given food hampers, omega-3 supplements and cookery workshops, and were asked to include fruit, veg, legumes, seeds, nuts, olives, olive oil, wholegrains and fish in their diet, and to restrict red meat, processed foods and confectionery. The result was a direct correlation between better diet and improved mental health, which was still evident after six months.

One of the best ways to increase dietary omega-3 levels is by eating oily fish, with the acronym SMASH (salmon, mackerel, anchovies, sardines and herring) as a helpful way to remember which varieties to eat. Seaweed (in sushi), spirulina (add to smoothies), flax, chia and hemp seeds (sprinkled over yoghurt for breakfast) as well as walnuts and edamame beans are good sources for non-meat eaters.

On a cautionary note, however, anyone taking blood thinning medication should avoid taking omega-3 supplements. A pharmacist, GP or registered nutritional therapist can advise on contraindications with medication you may be taking.

Vitamins and minerals

B vitamins are essential for our mental health, particularly B12. Because B12 is only naturally available in animal products, vegans are at greater risk of being deficient and so should take in supplements and fortified foods.

Zinc is also a nutrient that has produced interesting results. One study found that healthy young females given zinc plus multivitamin supplements[6] reported a greater reduction in depression scores than those who only took a multivitamin. This, it is thought, could be due to zinc's role in regulating chemical messengers (neurotransmitters). However, this was a controlled study and supplements are not always recommended — the NHS advises that high levels of zinc reduce the amount of copper that the body can absorb, which can lead to anaemia and weakening of the bones.

Before considering supplements, look to diet to provide what you need. Good sources of zinc include cashew nuts, dark chicken meat, legumes including chickpeas and lentils, seafood such as crab and lobster, wholegrains and meat (organic, grass-fed if possible). Another important 'feel good' mineral is magnesium, which helps to support a healthy 'sleep/wake' cycle and to regulate mood.[6] Dark green leafy veg, beans and peas, seeds, nuts and wholegrains are all good sources of this relaxation-inducing mineral.

Vitamin D is also important for healthy brain function.[7] Sunlight is the best source but it can also be obtained through SMASH fish, some types of mushroom, egg yolks and some fortified foods.

Serotonin

Eating food rich in tryptophan can improve levels of serotonin — a neurotransmitter believed to be important for regulating mood — which, in turn, may help to regulate sleep, improve energy and mood. An essential amino acid, tryptophan has to come from diet because the human body cannot produce it. Sources include turkey, chicken, salmon, eggs, spinach, nuts, seeds and tofu.

Exercise outdoors

Physical activity can be just as effective as medication for some who suffer with depression, and recent studies have shown that it can even help prevent depression occurring in the first place.[8] For those already taking medication, exercise may also work as a 'replacement' second anti-depressant. One study, however, highlighted that activity does need to be personalised.[9]

Although it can be hard to feel motivated to be physically active when it's blowing a gale outside, in winter, when the amount of light hitting the back of the eye is reduced, it is important to get as much

daylight as possible. Lack of light hitting the back of the eye interferes with message transmission to the brain, negatively affecting eating, sleeping and motivation. So make the most of daylight hours. Spending at least two hours per week in a natural setting is thought to make a difference to mental wellbeing, with time spent in urban green spaces counting as much as rural settings.[10] Even a lunchtime stroll, as well as longer forest walks at the weekend, could make a tangible difference. Feeling part of a supportive community is also important — it could be time to take up that hobby you've always meant to and meet some new friends!

Crowd out and squeeze in

Being out of routine and overindulgence over the festive season can heighten risk of depression, which may be compounded by lack of (or too much) sleep. Crowding out certain foods — unfortunately some that we might often turn to for comfort — and squeezing in healthier options can help. Alcohol, for one, acts as a depressant and a sleep disruptor, so consider giving Dry January a go.

Sugary foods and caffeine can also be triggers for feeling under par. A recent paper from the University of Michigan, USA, found that when fruit flies were exposed to a high-sugar diet, key metabolites associated with brain health become depleted.[11] Although the study was on fruit flies and the authors were not looking at mental health, it suggests that high levels of sugar may have an undesirable effect on the brain.

Some studies have also looked at gluten. One double-blind cross-over study of 22 non-coeliac participants found that unknowingly ingesting gluten was associated with higher overall depression scores when compared to placebo.[12]

A link between increased gluten intake and poorer mental health was identified in the mid-1950s,[13] and remains an area of interest. One round-up of the research published last year found that going 'gluten-free' improved symptoms of depression significantly for 1,139 participants whose data was analysed. Other findings included the fact that feeling low after eating gluten was often given as a reason for avoiding it. Although the researchers said further research was needed, it has been suggested that an immune response to gluten peptides or potential over-exposure to wheat in the western diet can manifest as depression, as a sub-type of coeliac disease with psychiatric symptoms, making it difficult to diagnose.[14]

But before you head off to fill a shopping trolley with the contents of the 'free from' aisle, it's important to remember that gluten-free products can have just as much sugar and fat as traditional products, if not more. If you love sandwiches for lunch and pasta or pizza for dinner, look for smart swaps that will add protein, fibre, vitamins and minerals to your diet, as well as removing the gluten. Try gluten-free oatcakes instead of white bread; similarly, chickpea fusilli and cauliflower pizza base are good swaps whilst adding in nutrients. And don't forget, a cake is still a sweet treat, gluten-free or otherwise!

Ask an expert

If you do consider changing your diet, a registered nutritional therapist can advise on this route and help to identify inflammatory drivers that could be impacting mental health. Nutritional deficiencies caused by poor digestion, overgrowth of 'bad' bacteria, under- or over-weight, stress, poor sleep and food intolerances are just some of the things that can make us feel below par. However, it is also important to consult your GP, particularly if you are taking prescribed medication.

DEPLETED GUT MICROBIOME AFFECTS BRAIN HEALTH IN MICE

A recent study on mice has discovered that low levels of diversity in gut bacteria can negatively affect brain health, with possible implications for mental health.[14]

According to the authors, a clear link has been observed between autoimmune disorders and various psychiatric conditions. For example, people with autoimmune disorders such as inflammatory bowel disease, psoriasis and multiple sclerosis may have depleted gut microbiota and may also experience anxiety, depression and mood disorders — but the mechanism for how gut health affects mental health has been unknown.

In this study, it was found that mice that had low levels of diversity in their gut bacteria or that were bred to be germ-free were less able to learn when a threatening danger was no longer present. To understand the molecular basis for this, the team sequenced RNA in immune cells (microglia) that reside in the brain, discovering that altered gene expression in these cells plays a role in remodelling how brain cells connect during learning processes. These changes were not found in microglia of healthy mice. When looking at chemical changes in the brains of germ-free mice, it was also found that concentrations of several metabolites associated with disorders such as schizophrenia and autism were changed.

Co-principal investigator Dr Conor Liston said: "Changes in gene expression in microglia could disrupt the pruning of synapses, the connections between brain cells, interfering with the normal formation of new connections that should occur through learning."

When the team attempted to reverse the learning problems by restoring gut bacteria, however, it was only successful if done right after birth. "We were surprised that we could rescue learning deficits in germ-free mice, but only if we intervened right after birth, suggesting that gut microbiota signals are required very early in life," said Liston. "This was an interesting finding, given that many psychiatric conditions that are associated with autoimmune disease are associated with problems during early brain development."

Co-senior author Dr David Artis said: "The gut-brain axis impacts every single human being, every day of their lives. We are beginning to understand more about how the gut influences diseases as diverse as autism, Parkinson's disease, post-traumatic stress disorder and depression."

Dr Frank Schroeder, a professor at the Boyce Thompson Institute and in the Chemistry and Chemical Biology Department at Cornell Ithaca, USA, said: "Brain chemistry essentially determines how we feel and respond to our environment, and evidence is building that chemicals derived from gut microbes play a major role."

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