



Step zero: optimising nutrition for physical and mental health wellbeing during COVID-19

Fiona McNicholas^{1,2,3}  • Louise Furey-Burke¹

Received: 13 October 2020 / Accepted: 21 November 2020 / Published online: 6 January 2021
© Royal Academy of Medicine in Ireland 2021

According to the most recent Healthy Ireland Survey, normal-weight adults are in the minority [1]. The association between obesity and subsequent ill health, most notably cardio-vascular, cancer and diabetes, is well known. Overweight or obese status is also associated with diminished immune function, increase in inflammatory markers such as C-reactive protein and fibrinogen in both adults and children, changes known to increase vulnerability to other infections. The poorer prognostic risk in obese individuals from H1N1 influenza has also now been suggested with COVID-19 [2] with the higher rate of obesity in older adults in Italy proposed as a putative explanation to account for the excess deaths in patients with COVID-19 compared to China [3].

Significant changes in dietary habits have led to current diets high in fat, salt and sugar, with minimum essential nutrients or dietary fibre. Deficiencies in vitamins such as A, C, D and E, along with lower levels of iron and zinc, have all been reported. These micro-nutrients are essential to health and possess anti-inflammatory, antioxidant, and even antiviral properties, salient given the current times [4].

Evidence is emerging linking vitamin D deficiency to increased infectivity, morbidity and mortality in COVID-19 [5], in parallel to benefits from supplementation [6]. Vitamin D is also considered neuroprotective, reducing oxidative stress, modulating neuronal excitability and stimulating nerve growth, with vitamin D receptors

abundant in many parts of the brain (Table 1). Deficiency states have been implicated in many psychiatric illnesses [6].

Vitamin D has particular relevance for the Irish population, with high rates of insufficiency by virtue of poor diet and poor UV exposure, especially true in the winter months [7]. Current rates of vitamin D supplementation among adults in Ireland are low (ranging from 9–18%) and the FSAI (Food safety authority of Ireland) recommended dosage of 10 mcg per day well below international recommendations. Given the onset of winter months in Ireland, with weather often a deterrent to outdoor activity, vitamin D levels may plummet in many. Current Level 5 restrictions imposed following upsurges in COVID-19, further limits gym activity, social engagement and other mood boosting activities. Increased sedentary time at home might risk increased food intake and weight gain and poorer mental health. Although the best advice to reduce one's risk from COVID-19 aligns with the HSE advice of social distancing, good hand and cough hygiene, reminding our patients of their ability to modulate their mood and health by careful attention to dietary intake, nutritional supplementation and other health-promoting habits such as exercise, sleep and relaxation are important (Table 1).

Conclusion The disproportionate impact of both influenza and COVID-19 in patients with obesity is a concern as we approach the winter months. Emerging evidence supports

✉ Fiona McNicholas
Fiona.mcnicholas@ucd.ie; Fionamcn2008@gmail.com

¹ Department of Child & Adolescent Psychiatry, SMMS, UCD, Dublin, Ireland

² Our Lady's Children's Hospital, Crumlin, Dublin 12, Ireland

³ Lucena Clinic Rathgar, Dublin 6, Ireland

Table 1 Optimising nutrition and wellbeing

1. Health screening with GP	<ul style="list-style-type: none"> • Check bloods for excess and deficiencies
2. Reduce stress	<ul style="list-style-type: none"> • Slow down and connect with your breath • Yoga and meditation • Gratitude • Mindful eating (chew each mouthful 20 times) • Complimentary therapies (kinesiology, acupuncture, massage)
3. Reduce toxicity	<ul style="list-style-type: none"> • Sugar • Alcohol • Smoking • Food intolerances • Caffeine • Viruses, harmful bacteria, parasites, fungus, heavy metals • Environmental toxins • Toxic relationships
4. Eat a nutritious varied diet (to increase gut health, balance blood sugars and hormones)	<ul style="list-style-type: none"> • Carbohydrates • Proteins • Healthy fats • Good gut bacteria • Water (2 l) • Vitamins, minerals, enzymes, salts • Colour matters, eat with your eyes • Combine a healthy carbohydrate with either a protein or healthy fat to help balance blood sugars • 6 weeks to balance blood sugars and hormones
5. Consider supplements and use essential oils	<ul style="list-style-type: none"> • Probiotics • Vitamin D • Vitamin C • Zinc • Omega 3 fatty acids • Essential oils
6. Adequate exercise	<ul style="list-style-type: none"> • Aim for at least 30 min of aerobic exercise daily • Aim for 10,000 steps daily • Get outdoors in nature and sunshine
7. Adequate sleep	<ul style="list-style-type: none"> • Aim for 8 h • Reduce technology at night
8. Maintain a healthy weight	<ul style="list-style-type: none"> • Waist measurements and BMI matter • Portion size matters • Visualise your dinner plate • Aim to eat within a 12-h window

Recommended reading for patients

- The Four Pillar Plan (Relax, Eat, Move, Sleep) by Dr. Rhangan Chattergee
- The Gut Makeover (4 Weeks To Nourish Your Gut, Revolutionise Your Health & Lose Weight) by Jeannette Hyde
- The Happy Kitchen (Good Mood Food) by Rachel Kelly
- The Happy Pear Vegan Cooking For Everyone by David & Stephen Flynn
- Quick & Easy Plant-Based Deliciousness by Deliciously Ella
- Gut Feeling (Delicious Low Fodmap Recipes To Soothe The Symptoms Of A Sensitive Gut) by Lorraine Maher & Paul Mee).
Delete if too much word count
- In Praise of Walking (The New Science of How We Walk & Why It's Good For Us) by Shane O'Mara
- Why We Sleep by Matthew Walker
- Brain Changer (How Diet Can Save Your Mental Health) by Professor Felice Jacka
- Why Isn't My Brain Working (A Revolutionary Understanding Of Brain Decline And Effective Strategies To Recover Your Brain Health) by Dr. Datis Kharrazian
- The Psychobiotic Revolution (Mood, Food And The New Science Of The Gut-Brain Connection) by John F. Cryan, Scott C. Anderson & Ted Dinan

Detailed practitioner leaflet for patients available on request L. Furey-Burke

dietary manipulation on physical and mental health in general and should become part of routine clinical practice.

approved the submitted version to be published and agree to be accountable for all aspects of the work.

Authors' contributions Both authors have contributed to the concept, design and writing, and reviewing of this manuscript. Both authors have

Data availability N/A

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical approval Ethics approval has not been required for this brief report.

Consent to participate N/A

Consent for publication The authors consent to the publication of this article.

References

1. <https://www.hse.ie/eng/about/who/healthwellbeing/our-priority-programmes/heal/healdocs/healthy-irelandsurvey-2018-summary-of-findings.pdf>, accessed Sept 20, 2020
2. Venkata C, Sampathkumar P, Afessa B (2010) Hospitalized patients with 2009 H1N1 influenza infection: the Mayo Clinic experience. *Mayo Clin Proc* 85(9):798–805 Elsevier
3. Dietz W, Santos-Burgoa C (2020) Obesity and its implications for COVID-19 mortality. *Obesity* 28(6):1005
4. Alberca RW, Oliveira LD, Branco AC et al (2020) Obesity as a risk factor for COVID-19: an overview. *Crit Rev Food Sci Nutr* 13:1–5
5. Aygun H (2020) Vitamin D can prevent COVID-19 infection-induced multiple organ damage. *Naunyn Schmiedeberg's Arch Pharmacol* 25:1–4
6. O'Neil A, Quirk SE, Housden S et al (2004) Relationship between diet and mental health in children and adolescents: a systematic review. *Am J Public Health* 104(10):e31–e42
7. Cashman KD, Muldowney S, McNulty B et al (2013) Vitamin D status of Irish adults: findings from the National Adult Nutrition Survey. *Br J Nutr* 109(7):1248–1256

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.