case reports
THE CARE GUIDELINES

CASE REPORT

To encourage other practitioners to consider submitting a case report for the E-News, we have restructured the format in line with recommendations from July 2014 and have left in the key guides – should you be interested just email info@nutri-link.co.uk We will send you the word doc.

Case reports are profesional narratives that outline the diagnosis, treatment, and outcomes of the medical problems of one or more patients. Information from case reports can be shared for medical, scientific, or educational purposes. They provide a framework for early signals of effectiveness adverse events, and cost. Case reports and the systematically collected data from which they are written also provide feedback on clinical practice guidelines.

Case Report of a 65 year old overweight woman suffering from arthritis, raised cholesterol, a minor essential tremor, regular headaches, worsening memory and oedema which all resolve in time with a targeted NT programme.

Abstract. *Summarise the following information if relevant: (1) Rationale for this case report, (2) Presenting concerns (eg, chief complaints or symptoms, diagnoses), (3) Interventions (eg, diagnostic, preventive, prognostic, therapeutic exchange), (3) Outcomes, and (4) Main lesson(s) from this case report.*

This case explores a nutritional focused approach to the resolution of a number of health issues in a 65-year-old lady, Mrs W.D., over a 2 year time period.

Mrs W.D. had struggled with her weight and ankle oedema for 30 years but had otherwise been in good health. However, 15 years prior, she began to experience 'arthritic' knees and other joints, and then in time a number of other symptoms emerged and remained. These included in sequence a minor essential tremor, headaches which troubled her every week, raised total cholesterol and a noticeably less good memory. Nothing in this list was particularly bad or marked, but when combined they all resulted in a reduced quality of life and very real sense of aging. She admitted that she also felt tired most days.

Before focusing on the specific case history details, provided below is a brief summary review of the health issues and conditions that W.D. is experiencing.

Excess weight is well documented in its association with a wide number of health conditions and diseases including heart disease & diabetes. In 2015, 58% of women and 68% of men in the UK were overweight or obese. Obesity prevalence increased from 15% in 1993 to 27% in 2015.[1] This puts W.D. in the majority of her peers. Whilst each individual who is overweight may have one of a number of different reasons for their excess fat from poor dietary practices, excess food intake, abnormal hormonal balance, insulin resistance, sedentary lifestyles, no matter what the cause there is a risk to health.

Oedema is a build-up of fluid in the body which causes the affected tissue to become swollen. The accumulation of fluid under the skin causes swelling, often in the lower legs and ankles (known as peripheral oedema). Oedema is often a symptom of an underlying health condition. It can occur as a result of the following conditions or treatments[2]:

[1] National Statistics: Statistics on Obesity, Physical Activity and Diet England: 2017
[2] https://www.nhs.uk/conditions/oedema/

Pregnancy	Kidney disease
Heart failure	Chronic lung disease
Thyroid disease	Liver disease
Malnutrition	Medication (e.g. steroids)
The contraceptive pill	Immobility and standing for long periods

Medical treatment for oedema may be limited, but could involve taking medication or following some advice, such as:

- losing weight (if you're overweight)
- taking regular exercise, such as walking, swimming or cycling
- raising your legs three to four times a day to improve your circulation
- avoiding standing for long periods of time

Arthritis impacts the lives of over 10 million adults in the UK.[3] There are about 200 different musculoskeletal conditions. Arthritis is a term used by doctors to describe inflammation within a joint, while rheumatism is a more general but frequently less recognised term that's used to describe aches and pains in or around the joints. It is estimated that more than eight million people in the UK have osteoarthritis and more than 400,000 have rheumatoid arthritis.[4]

There are many different causes of arthritis, which can affect anyone at any age. Inherited or genetic dispositions can play a role, as can lifestyle, injury and infection history. Weight may be a factor in osteoarthritis.

Essential tremor is a type of uncontrollable shake or tremble of part of the body. Essential tremor is more severe than normal tremor and it gradually gets worse over time. Eventually, the tremor may become so severe that carrying out normal, everyday activities can become difficult.[5] It is estimated that there may be as many as 1 million people in the UK with essential tremor.

Certain things may temporarily increase any tremor, including:

- tiredness caused by strenuous activity or lack of sleep
- smoking (W.D. has never smoked)
- caffeine – from tea, coffee and some fizzy drinks
- being very hot or cold
- taking certain medicines – including some antidepressants and treatments for asthma.

Genetics and essential tremor
For essential tremor there is a wide range in the estimates of the risk to other family members, when a single person has been affected. In general terms, people with a young age at onset and essential tremor, often have a family history of others affected with the same condition, whereas those who develop essential tremor later in life are less likely to have a familial disease.

[3] https://www.arthritisresearchuk.org/
[4] https://www.arthritisresearchuk.org/arthritis-information/conditions/arthritis/who-gets-it.aspx
[5] http://www.tremor.org.uk/what-is-essential-tremor.html

In studies of twins with essential tremor, about 60% of identical twins will have both twins affected with tremor, as opposed to about 30% of non-identical twins. Although a lot of progress has been made in identifying potential genetic areas which might harbor genes that cause essential tremor (ET), very little progress has been made in identifying the specific genes.[6]

The biology underlying ET is not fully understood. It is a disorder of the central nervous system's regulatory circuits that control voluntary movement. There is at present no cure for ET but medication is available to suppress symptoms. Currently very promising strategies are being explored in Parkinson's disease and other movement disorders that may eventually prove applicable to ET.

Tremor is the most frequent movement disorder in the population and can also be associated with pesticide exposure. The conclusion of a recent 2017 study was that those with 16 to 16.9 years of pesticide use showed the highest odds of essential tremor.[7]

Headaches are very common but may have a multitude of causes. Headache is the symptom of pain anywhere in the region of the head or neck. More than 10 million people in the UK get headaches regularly, making them one of the most common health complaints, but most aren't serious and are easily managed.[8]

Tension headaches are amongst the most common type of headache, and although the exact cause is unclear, but they have been linked to things such as stress, poor posture, skipping meals and dehydration.

Other causes include:

- drinking too much alcohol (W.D. has a single drink a week)
- a head injury or concussion (W.D. has no history of any knocks to the head)
- a cold or flu
- temporomandibular disorders – problems affecting the "chewing" muscles and the joints between the lower jaw and the base of the skull
- sinusitis – inflammation of the lining of the sinuses; read more about sinus headaches
- carbon monoxide poisoning
- sleep apnoea – a condition where the walls of the throat relax and narrow during sleep, interrupting normal breathing

Elevated cholesterol has been identified as a marker of coronary heart disease. According to the US National Heart, Lung & Blood Institute "the higher your blood cholesterol level, the greater your risk of coronary heart disease (CHD) and heart attack."[9] However, it is more accurate to state that a raised level of oxidised LDL cholesterol is a greater risk than raised cholesterol on its own.[10]. Equally, non-HDL cholesterol may be a greater

[6] http://www.tremor.org.uk/is-et-genetic.html
[7] Azevedo MFA, Meyer A. [Essential tremor in endemic disease control agents exposed to pesticides: a case-control study]. [Article in Portuguese] Cad Saude Publica. 2017 Aug 21;33(8):e00194915. doi: 10.1590/0102-311X00194915. View Abstract - View Full Paper
[8] https://www.nhs.uk/conditions/headache/
[9] https://www.nhlbi.nih.gov/health/health-topics/topics/hd/atrisk
[10] Ogawa K et al. Increase in the oxidised low-density lipoprotein level by smoking and the possible inhibitory effect of statin therapy in patients with cardiovascular disease: a retrospective study. [10] BMJ Open. 2015 Jan 21;5(1):e005455. doi: 10.1136/bmjopen-2014-005455.

risk factor than total cholesterol[11]. Raised lipoprotein(a) is also a more profound risk marker for heart disease.[12],[13]. Homocysteine is another risk factor that has more significance than cholesterol in isolation, and in one study was identified as "the most significant biochemical risk factor for vascular disease".[14]

Declining memory is part of cognitive decline which is more likely to occur in the seventh decade of life than the third. It is referred to as mild cognitive impairment (MCI), and commonly reported functional memory problems include the following:[15]

- Names of people, places
- Misplacing things
- Keeping track of schedule of commitments
- Forgetting to carry out an intended activity
- Numbers & passwords
- Remembering what was said or decided upon

W.D.'s observations and those of her family were that there was a slight decline in memory, referred to jokingly as "senior moments" which included most of the above short list.

Inflammation can be seen as a thread that weaves all of the health issues suffered by W.D., and this has been extensively explored in the literature, including the gut-brain axis linking obesity to cognitive dysfunction.[16]

Fatigue is one of the most common symptoms experienced in the UK. It has been reported that "Fatigue is an important symptom in general practice due to its association with physical, psychological and social problems", and furthermore its prevalence may be considerably more than previously reported.[17]

Fatigue can exist with normal blood glucose parameters. There are a variety of causes of fatigue including anaemia (not present in W.D.), circulatory issues, respiratory issues, dehydration, under functioning thyroid, being overweight, insomnia, seasonal affective disorder (SAD), mononucleosis and more besides. However,

[11] Orakzai SH, Nasir K, Blaha M, Blumenthal RS, Raggi P. Non-HDL cholesterol is strongly associated with coronary artery calcification in asymptomatic individuals. Atherosclerosis. 2009 Jan;202(1):289-95. doi: 10.1016/j.atherosclerosis.2008.03.014. Epub 2008 Mar 25. View Abstract

[12] Korneva V, Kuznetsova T, Julius U. Analysis of lipid metabolism and its impact on the risk of ischemic heart disease in patients with definite familial hypercholesterolemia. Atheroscler Suppl. 2017 Nov;30:56-62. doi: 10.1016 / j.atherosclerosissup. 2017.05.008. Epub 2017 Jun 1. View Abstract

[13] Li S, Wu NQ, Zhu CG, Zhang Y, Guo YL, Gao Y, Li XL, Qing P, Cui CJ, Xu RX, Sun J, Liu G, Dong Q, Li JJ. Significance of lipoprotein(a) levels in familial hypercholesterolemia and coronary artery disease. Atherosclerosis. 2017 May;260:67-74. doi: 10.1016/j.atherosclerosis.2017.03.021. Epub 2017 Mar 18. View Abstract

[14] Bhargava S, Ali A, Manocha A, Kankra M, Das S, Srivastava LM. Homocysteine in occlusive vascular disease: a risk marker or risk factor. Indian J Biochem Biophys. 2012 Dec;49(6):414-20. View Abstract

[15] https://www.ageuk.org.uk/globalassets/age-uk/documents/reports-and-publications/reports-and-briefings/health--wellbeing/rb_oct14_cognitive_decline_and_dementia_evidence_review_age_uk.pdf

[16] Solas M, Milagro FI, Ramírez MJ, Martínez JA. Inflammation and gut-brain axis link obesity to cognitive dysfunction: plausible pharmacological interventions. Curr Opin Pharmacol. 2017 Nov 3;37:87-92. doi: 10.1016/j.coph.2017.10.005. [Epub ahead of print] View Abstract

[17] Cullen W, Kearney Y, Bury G. Prevalence of fatigue in general practice. Ir J Med Sci. 2002 Jan-Mar;171(1):10-2. View Abstract

inflammation is a known contributor to fatigue, as well as reduced cognitive function[18], and is a feature of being overweight.

Key Words. *Provide 3 to 8 key words that will help potential readers search for and find this case report.*
Obesity, fatigue, oedema, arthritis, essential tremor, cognitive decline, poor memory, cholesterol, headaches, inflammation.

Introduction. *Briefly summarise the background and context of this case report.*
Mrs W.D. had been struggling with an ever-increasing list of symptoms or conditions over the past 30 years. There had also been relatively short-term conditions that had come and gone in her lifetime which may be relevant to the present day, in that they fit into a pattern that can help to offer insights into her current status. Her two children, both boys, had been 5 and 3 at the time when weight had crept up, so not immediately after pregnancy and childbirth. It was at the time when her eldest had started to go to school and the younger was in day care.

In truth, it had not all started with weight gain 30 years ago, but this was something that W.D. had not dealt with successfully in that time and the excess weight was the first persistent health issue. The oedema had accompanied the weight gain, and whilst it was not 100% certain that one led to the other, W.D. stated that this was her belief.

Some 15 years after being overweight and having oedema, she began to suffer from sore knees, which was diagnosed as osteo-arthritis and it had spread to her hands and then shoulders. This troubled her daily.

9 years later, some 6 years ago, the essential tremor manifest itself in one hand only, and had remained relatively mild, and had not worsened significantly since it started. If ever she held a glass of water in her hand it would shake observably. This had been a big worry when she first had it, but as time went by and it had not worsened her anxiety about it had dissipated.

W.D. found it difficult to tell when her general state of fatigue had emerged and then set in. She estimated that her energy had been less ever since the arthritic symptoms emerged 15 years ago. Probably, over the past 5 years, it had been more pronounced. Since it had come on gradually, it was challenging for her to give a clear time-line. Nonetheless, W.D. felt tired every day and as a consequence, she did less than she used to, and felt less motivated to do anything.

As part of a big effort to regain some quality of life, W.D. was also seeking the advice of a life counsellor, whom she had been seeing for a few months prior to engaging in nutritional therapy, and this was the major prompt for seeking my professional advice.

Presenting Concerns. *Describe the patient characteristics (eg, relevant demographics—age, gender, ethnicity, occupation) and their presenting concern(s) with relevant details of related past interventions.*
W.D. presented with evident excess weight but otherwise appeared to be fine, with a ready smile, direct eye contact and an easy manner.

W.D. was 65 when we first met but had celebrated her 67th birthday by the time we met for the most recent appointment and as you are reading this case report.

[18] Straub RH. The brain and immune system prompt energy shortage in chronic inflammation and ageing. Nat Rev Rheumatol. 2017 Oct 12. doi: 10.1038/nrrheum.2017.172. [Epub ahead of print] View Abstract

W.D. was 14 stone when we first met, and a height of 5 foot 4 inches. She is Caucasian from English parents with all grandparents being of English descent.

W.D. experienced sore knees whenever she walked but it was worse when walking downhill or down stairs than uphill or when climbing the stairs. At rest, when sitting or lying, she felt no pain, however. Her hands were sore, her knuckles slightly enlarged, and her shoulders ached and limited her mobility; she could not lift anything above her head.

When she held out her righthand in front of her, it was clear to see that there was a tremor, which meant that if she ever held anything in her right hand that it was shake. If she used a pen then the more firmly she held it and pressed onto the paper, then the less the tremor manifest itself. Fortunately, the tremor had not changed much at all in the 6 years it had been present, so it had simply become part of her daily life, and did not pose a threat to her well-being.

It was her fatigue, aches and pains with lack of mobility and excess body fat that were the real issues. She did not care that her cholesterol was high, and she laughed off her slight increased frequency of senior moments; she recognized that this happened but was not worried since it was always something minor.

What W.D. really wanted were these things, as written out in her Health Goals:

- To lose body fat (four stone)
- To have reduced aches and pains & greater mobility with her arms
- To have more energy for everyday activities

And the lesser goals were:

- To improve short-term memory
- To be free of the tremor
- To have optimal levels of cholesterol

This case report spans two years of intervention on a nutritional level as well as on a psychological level. She had counselling sessions every two weeks at the start of the process and then every month after that, compared to a much lesser frequency of nutritional therapy appointments.

Clinical Findings. *Describe: (1) the medical, family, and psychosocial history including lifestyle and genetic information; (2) pertinent co-morbidities and relevant interventions (eg, self-care, other therapies); and (3) the physical examination (PE) focused on the pertinent findings including results from testing.*

W.D. has an older brother (69) and younger sister (63) and they both have arthritis. Her brother has diabetes which is controlled by diet and metformin. Her sister has had a hip replacement, and she also struggles with her weight for the past 10 years.

W.D.'s father had Parkinson's Disease and her mother had senile dementia, hence the anxiety when the tremor started. However, the decline in her cognitive functions had been marked and considerably later in life, aged in her late 70's. She too had suffered from arthritic knees.

W.D. had been born in East Sussex and been schooled there and then worked in the home counties and London as a maths teacher. She had married and then had two children in her thirties. When the children were both at school she resumed her teaching job until retirement age of 55.

W.D. had required medical assessment and intervention in her 20's for depression and this was present for two years or so, and did not recur.

With regard to her current concerns, she had tried but failed to lose weight for decades. This was why she was seeking the advice of a professional life counsellor, helping her to address some long-term habits and belief systems. She had not engaged in any meaningful treatment for oedema, nor her arthritic knees, hands and shoulders. There was "nothing that could be done for her tremor" so she had been told by her doctor, and because it had not worsened, she had not sought out any treatment. W.D. had no idea that fatigue was something that could be addressed or resolved with any specific therapy. In this way, W.D. had been living a largely unchanged lifestyle for decades.

We had no blood test evidence from W.D. except the recent (within a month of our first meeting) blood test at her GP's which identified a raised total cholesterol. There were no other abnormalities within the standard analytes of the haematology and biochemistry test.

W.D. was a candidate for functional lab testing that could confirm the degree of metabolic syndrome and the presence of systemic inflammation. Tests could also be useful for discovering sub-clinical hypothyroidism, for example, or the presence of an altered intestinal permeability, the presence of food reactivity (i.e. "sensitivity"), nutrient insufficiencies. We discussed the option of all lab tests.

Timeline. *Create a timeline that includes specific dates and times (table, figure, or graphic).*

These are the health events in W.D.'s life, as noted when we first met in 2015:

1951 – W.D. born in East Sussex, with a normal delivery.

1955 – Chicken pox, aged 4.

1960 – Anaemia

1970 – German measles

1972 – present day – occasional muscle spasms

1974 – Cystitis treated by antibiotics

1974-75 – Clinical depression treated with anti-depressants

1974 – 2004 – mild eczema

1980 – Deep vein thrombosis due to birth control pill

1985 – weight gain – until current day, accompanied by oedema

2000 – present day – arthritic knees, hands and shoulders
2000 – present day - probable onset of fatigue, at lowest level in 2015

2009 – present day – essential tremor in right hand
2009 – until present - Suspected glaucoma

2015 – raised cholesterol

Diagnostic Focus and Assessment. *Provide an assessment of the (1) diagnostic methods (eg, PE, laboratory testing, imaging, questionnaires, referral); (2) diagnostic challenges (eg, financial, patient availability, cultural); (3) diagnostic reasoning including other diagnoses considered, and (4) prognostic characteristics (eg, staging) where applicable*.

The only lab test that W.D. had undertaken in living memory was the recent blood test which had revealed her raised cholesterol. Previous diagnoses were made entirely on symptomatic expression (i.e. obesity, oedema, osteoarthritis, essential tremor, and no formal assessment had been made for her cognitive function.

We discussed the possibility of various functional lab tests, but once the overview of the dietary changes had been made clear, it was agreed that the most sensible approach was a dietary modification programme. W.D. was being supported in all change by her life counsellor.

The nutritional changes involved a specific exclusion diet combined with targeted nutritional supplements. This was a cost W.D. was prepared to make, even though hers and her husband's pensions were minimal state pensions. There was nothing to stop W.D. in implementing the changes in practical terms, but she acknowledged that there was resistance to dietary change given her past history of attempting to make changes and failing. However, now with the support of her life counsellor, she felt much more confident about making and sustaining changes in eating patterns, both in terms of the food being eaten and the way in which it was eaten (food frequency & quantity).

Although W.D. said that she knew she should do some form of exercise, in the first phase at least, this was not recommended. There were definite obstacles to taking regular exercise, not least the fact that her knees ached and were in pain if she moved faster than walking pace. She was not able to walk very far, she could not go on a cross-trainer, and her knees ached after cycling for more than 5 minutes. The nearest swimming pool was a 25 minute drive and this was prohibitory to a regular swim. All of these things combined with the fact that W.D. had a low level of energy. In this way, it is possible to see the challenges in such cases for individuals faced with the need to take regular exercise but not being able to.

A dietary analysis revealed that W.D. ate five times a day, typically, with breakfast, lunch & dinner and two snacks. She felt that her energy was better if she ate something to boost it. Of course, in nutritional terms, this approach to propping up blood glucose levels with carb snacks only leads to a worsened blood glucose profile. She was an omnivore, but her meals were carbohydrate dominant. She did mostly avoid all pre-packaged food and prepared most food from the fresh ingredients at home. However, she consumed dairy products every day, she ate wheat and other gluten grains and non-gluten grains every day at least twice. Her snacks included flapjacks (shop bought), fruit, honey on a cracker of one kind or another. Eat bars (shop bought), Bounce Balls (shop bought). Most challenging of all for W.D. was her like of 'healthy biscuits', which we agreed may well be healthier in their absence of trans fatty acids, but probably in no other way. W.D. admitted that she would more often than not consume too many of these biscuits, and sometimes succumbed to "finish the packet syndrome".

From a non-computerised caloric assessment, a rough estimate of caloric intake was a minimum of 2,500 kcals per day or more on those days when there was a packet of biscuits in the house.

W.D. reiterated that she was ready to face all challenges to her achieving her goals, and was determined to stick with whatever changes and recommendations that I was to make.

Therapeutic Focus and Assessment. *Describe: (1) the type(s) of intervention (e.g., preventive, pharmacologic, surgical, lifestyle, self-care) and (2) the administration and intensity of the intervention (e.g., dosage, strength, duration, frequency).*

Based on W.D.'s dietary intake, and possible addiction to sugar or carbs and wheat products, I recommended W.D. to avoid all grains from her diet and replace them with healthy alternatives. Specifically, this meant avoiding wheat in all forms, rye, all oats, rice, corn, and barley. This resulted in quite a radical change in W.D.'s intake, affecting almost each and every food intake. Porridge for breakfast or toast for breakfast was now off the menu. Pasta, bread rolls, rice or cous cous salads were also out.

We spent some time establishing alternatives, and I used some healthy eating plate picture cards to support the process. I also recommended the book by Dr. David Perlmutter 'Grain Brain' and sent W.D. a web link to Dr Loren Cordain's site which provides information about a paleo diet: http://thepaleodiet.com/.

Included in the five dietary recommendations was the vital one of limiting food intake to three times a day, which meant no snacks.

We agreed that the regular support of the life counsellor would be of tremendous value.

In terms of nutritional supplements, I focused on blood glucose control and reducing systemic inflammation which are described below.

First Supplement Programme – month 1	
GlucoBalance (BRC)	1 with each meal (3 p.d.)
KappArest (BRC)	2 with each meal (6 p.d.)

Due to the ongoing support from her life counsellor, we agreed that we would have a short telephone review in about 3 weeks after the first appointment. At that time, we would identify when the face to face appointment would take place.

We did speak about 3 weeks after we had first met, when I learned how many of the recommendations W.D. had managed to follow, and with a brief conversation about any changes in her health. W.D. had succeeded in following all of the recommendations which were, in short summary:

- Avoid all grains (& read the book, Grain Brain)
- Eat 2-3 veg at lunch & dinner
- Eat 3 times a day only, no snacks, leaving 4 hours between each meal
- Eat a protein at each meal (for blood glucose balance)
- Eat a balance of proteins with small portion of carbohydrate at each meal

In terms of changes in her health after 3 weeks, W.D. had encountered quite strong withdrawal from the carbohydrates and grains, although it was not possible to determine how much of her symptoms were due to one or the other. She had sourced weekly help from her life counsellor, and I appreciated that this was integral to the ability of W.D. to follow the recommendations. W.D. had experienced cravings, a flare up of painful arthritic symptoms which resulted in pain even at rest which was unusual. She had felt more tired than usual, and had periods of utter exhaustion which required her to lie down and sleep for an hour. W.D. had experienced more senior moments which was a little distressing, but she did understand that the early days may be a reflection of the adaptive changes occurring within her. She had lost 7 lbs in weight in the first 10 days, and then regained about 5 lbs in the following 10 days, without any change in volume of food eaten. The tremor was unchanged.

I encouraged W.D. to continue with diligence the exclusion diet and the consumption of the healthier food, and to taking the supplements daily.

We agreed that we would meet 4 weeks later, i.e. 7 weeks after she had started.

When we met face to face, we reviewed the dietary changes that W.D. had implemented, whether or not she had taken the supplements, and then what impact that had had on her health. She had indeed taken the supplements 'religiously', except for a weekend spent away from home, and abided by the grain exclusion, the three intakes per day, and done her best to match the healthy food plate which pictorially described the balance of food on a plate, namely, a good portion of protein, about half of the plate comprised of vegetables, with non-grain carbohydrates filling about a quarter of the plate.

What we referred to as withdrawal symptoms had persisted beyond a month, in various forms. The cause of some of the symptoms may well have been due to hormonal adaptation, or other causes. Nonetheless, the fact that the cravings, the flare up of the arthritic symptoms, the weight fluctuations, were all transient and had resolved within a relatively short time period of 5 to 6 weeks. What I learned from W.D. was that her energy was much better than it had been, and the cravings were much less, the arthritic flares were gone and her aches and pains were about one third less than before in similar circumstances (i.e. going downstairs), and her weight was "falling off" after the downs and ups she had experienced in the first five weeks. She was now 10 lbs lighter than when we first met. She realized that the improvement in her health was a project and required disciplined, habitual adherence to her "new diet" – the word "diet" was something I was doing my best to shift to another term, so as to have her think of her food intake as a normal routine rather than a short-term weight loss measure.

From the first phase improvements, it was a straightforward thing to do to commend her to maintain the grain free diet she was now following. (Oh, I agreed that sometimes the word diet was not possible to euphemise it into something else.)

I explained what I believed had occurred within her body, that inflammation had been reduced, and that this inflammation was likely to have been derived from the consumption of grains. However, I could not apportion the degree of inflammation to the avoidance of any specific elimination of wheat or gluten or carbohydrates as a whole with its consequent insulin stimulus. However, I did express that I believed that it was the avoidance of foods that had previously comprised a significant minority of her diet, or more, was very likely to have resulted in her improvements rather than the increased intake of vegetables or the taking of the supplements. I then explained the intended benefits of the supplements, with which I have some experience, particularly in the role of helping to minimise insulin and optimise blood glucose control and to reduce inflammation and hasten the end of the inflammatory withdrawal symptoms.

The tremor had not improved and nor had the senior moments had achieved a higher level of awareness and concern as W.D.'s other health issues had begun to diminish, in spite of the fact that there was still quite some way to go to achieve W.D.'s health goals. As a result, W.D. asked me to supply her with a recommendation for her cognitive function and her nervous system.

Clearly, W.D. was in the process of achieving changes of utmost importance to her overall well-being and this was undoubtedly made possible by her life counsellor who was enabling the implementation of change, and for my part it was hoped that on a technical level the nutritional changes were the most appropriate to bring about the most beneficial and effective biochemical, hormonal, immunological & neurological outcomes.

In response to the improvements and W.D.'s request for additional support and to optimise her vitamin D status, I changed the supplement programme to this:

Second Supplement Programme – month 3	
GlucoBalance (BRC)	1 with each meal (3 p.d.)
KappArest (BRC)	2 with each lunch & dinner (4 p.d.)
Cognitive Enhancer (BRC)	1 caps 30 mins before each meal
Bio-D-Mulsion Forte (BRC)	2 drops with dinner

We agreed to meet after 3 months. However, I received contact from W.D. who was doing well, and the time period was extended to 6 months. However, I did recommend her to stop the Vitamin D unless she had a blood test for this vitamin, which she hoped to organise via her GP.

We met 6 months after that second face to face meeting, some 8 months after our first appointment. W.D. was still losing weight. Indeed, she had lost 16 lbs since the first appointment which meant she had 32 lbs to go in order to reach the goal of 4 stone. The oedema seemed to be less, she reported. W.D.'s arthritic symptoms were less than before, and she was more mobile and had engaged in more activity every day. W.D. told me that every day in a very small way she felt that was getting better. Her tremor remained the same, although her senior moments as experienced and observed by her husband and family and friends appeared to be less. We had a conversation about the ability to properly record such data and recognised that it was quite unscientific and anecdotal, but at the same time appreciated that is the subject, in this instance W.D., perceived that she was improving then this may result in a self-fulfilling prophecy.

W.D.'s energy was most certainly improving month on month and this was the most noticeable thing to all around other than the shedding weight, with re-emergence of old clothes not worn for some time.

We discussed the reason for all of her improvements and fully acknowledged the crucial help of the life counsellor who had been responsible for W.D. to instigate change and then maintain it. W.D. told me straight that she was a different person now and a very different client as a result of this compared to the woman who she could have been had she come to visit me without that additional support. This reminded me of the value of a health coach which has become recognised in the US and is beginning to gain small traction in the UK, although affordability of the model is a challenge (i.e. the client / patient pays for the nutritional advice and also pays for a separate health coach to help them implement the plan devised by the NT).

W.D. had moments when she was faced with an option of eating a delicious looking wheaty meal or glutenous or sugary snacks but she resisted, although she had been tempted many times. She was able to share this with

me thanks to the new insights that were available to her. The ongoing discipline of compliance to something that was working was quite inspiring, and at the same time, I wondered just how many people are faced with the same kind of temptations and then simply and naturally enough give in to them and as a consequence do not experience the gains in health that they might otherwise. Then it struck me that it may be extremely difficult to know what the right nutritional approach was, because if you could not follow a distinct eating plan then how could one know if it worked or not.

We identified that some musculo-skeletal support was warranted to support her knees in particular, although her hands and shoulders were now less stiff, achy & her arms had a greater range of motion. I included a pre-digested collagen powder to her next supplement programme.

In addition to the collagen support for her 66 year old knees, W.D. also wanted to ensure optimal nourishment for her eyes, because her eyesight had been deteriorating but also because she had been recently found to have a degree of glaucoma, again, and this had first been identified in 2009. I included a lutein with zeaxanthin supplement into her programme. Interestingly, research shows that glaucoma is a sign of a systemic imbalance in health and that by reducing inflammation and oxidative stress that this may be reduced. The key eye nutrients of lutein and zeaxanthin may contribute to this goal, along with a regular intake of antioxidants from vegetable sources.[19] I told W.D. what foods contained the richest sources of eye-protective nutrients.

I reduced the dose of the initial supplements of GlucoBalance and KappArest, due to reduced need.

Third Supplement Programme – month 8	
GlucoBalance (BRC)	1 with breakfast & lunch (2 p.d.)
KappArest (BRC)	2 with lunch
Cognitive Enhancer (BRC)	1 caps 30 mins before each meal
Arthred Collagen Powder (ARG)	1 scoop added to water, 20 mins before breakfast & dinner
Lutein 20 mg (ARG)	1 with breakfast

We set the next date to meet 6 months ahead. I had confidence that not only was the programme the most effective one for her, but also she would have the ongoing support of her life counsellor, and we agreed that should there be any symptoms or reversal of improvements that she would contact me.

Time went by fast, as it seems to do, and when we met again, it was more than 14 months into the nutrition programme. W.D. had lost a further 20 lbs making a total of 36 lbs thus far, exactly 3 stone of the 4 stone she had wanted to lose. She looked younger, and told me she felt younger. Her arthritic symptoms were considerably less and only exacerbated by more strenuous stair climbs or steep downhill paths. Her hands were free of any discomfort and she could readily reach above her head into the top cupboards at home. The collagen powder had worked well for her knees and she was now confident of postponing any knee replacement ops until as late as possible. Her energy was so much better than it had been and her productivity, if that is what one called it, was very high. She was living life so much more to the full.

She admitted that she still required focused effort and attention to ensuring that she ate the right foods for her and avoided the grains, which had been the most significant nutritional change for her. She now had a group of friends who asked her advice on all things nutritional and she was referring them to David Perlmutter's book.

[19] Fernández-Araque A, Giaquinta Aranda A, Laudo Pardo C, Rojo Aragüés A. The antioxidants in the process of ocular pathology. [Article in Spanish; Abstract available in Spanish from the publisher]. Nutr Hosp. 2017 Mar 30;34(2):469-478. doi: 10.20960/nh.420. View Abstract

However, one of them had the professional advice from a life counsellor to help them facilitate change and nor a Nutritional Therapist to identify and recommend the most effective (one hopes) eating plan and nutritional supplements. W.D. and I both recognized the likely futility of following the advice in that excellent book without some kind of support network or individualised advice.

We reviewed all of her food intake, the activities that W.D. now engaged in, the fluids consumed other than filtered water, and discussed the best way to cook foods and the best cookware to use and what oils to cook with if any.

I checked in with W.D. on her original list of health goals, and I show here the outcomes after 14 months of full engagement in her nutrition programme.

- To lose body fat (four stone) – *W.D. had lost 3 stone*
- To have reduced aches and pains & greater mobility with her arms – *W.D. had no more aches or pains in her hands and much greater mobility in her shoulders and a 75% improvement in her knees.*
- To have more energy for every day activities – *W.D. had totally achieved this life-changing goal.*
- To improve short-term memory – *W.D. had reduce the frequency of poor memory and felt generally more alive and with it*
- To be free of the tremor – *no change*
- To have optimal levels of cholesterol – *not re-tested, so unknown, but her risk of cardiovascular disease was likely less due to the significant weight loss*

I reviewed the supplement for W.D. which were to be for the next 5 months. W.D. was travelling abroad for 6 weeks shortly after that time. I added a vitamin D formula but with the other fat soluble vitamins A, E & K.

Fourth Supplement Programme – month 15	
Cognitive Enhancer (BRC)	1 caps 30 mins before each meal
Arthred Collagen Powder (ARG)	1 scoop added to water, 20 mins before breakfast & dinner
Lutein 20 mg (ARG)	1 with breakfast
Vitamin D3 Complete (ARG)	1 with dinner

We met for the fifth time 5 months after the fourth visit. W.D. had maintained her regular appointments with her life counsellor and credited her with her transformative attitude to her health. At the same time, we both recognised that after all these months that W.D. had built a reserve of understanding, knowledge and fortitude plus had engrained positive habits.

W.D. announced that she had lost a further stone in weight, achieving the total of 4 stones since she had begun. Her energy and physicality were both as good as she could hope for. She had abided by a grain free diet for over two years, had eaten more nourishing vegetables in the past 24 months than the previous 48 months, and had achieved profound health improvements. We both noted, however, that in spite of those health changes, that her tremor had not changed at all.

One thing I had missed from reporting previously and something that we did cover in this fifth appointment was the resolution of her headaches which had not been a major target but something that had cleared within the first 3 months.

We did not have lab evidence to show the differences between then and now, and we did not have blood tests to prove she was in a different range, but we did have the very tangible evidence of a 4 stone loss of body fat (or mostly body fat), a radical change in energy, a total or significant reduction in arthritic pains, and a noticeable reduction in senior moments.

The likely explanation of these positive outcomes is the reduced inflammation derived from the cessation of regular and daily consumption of grains. Whether or not this was a gluten grain issue or a general grain issue is not known. With the reduction in inflammation, there may have been a normalization of intestinal permeability. There may have been an improvement in liver enzymes, as has occurred with other patients, but this is not known either. There may well have been a reduce level of insulin, the most inflammatory of all hormones.

W.D.'s case brings to mind the book by Denise Minger called Death by Food Pyramid in which she exposes the poor science behind the government recommended food pyramid which has grains as the base of the pyramid and most abundant of foods.

W.D. continues with her grain free diet, consuming sources of high biological value proteins, plenty of fresh veggies and avoiding refined sugar and importantly leaving 4 hours between each meal. She plans to continue to lose body fat. Now that she is 10 stone, she recognises that 9 ½ stone may suit her better. The gradual weight loss over 2 years has meant that she has not had to deal with excess skin on her body. She is so much looking forward to pursuing what interests her in life and is a great advocate of self-responsibility, now that she can implement it!

Supplement Information

GlucoBalance® (BRC)
Formulated by Alan Gaby MD & Jonathan Wright MD, this multi nutrient formula is designed to support a healthy level of blood glucose and lipids. It provides clinically useful levels of chromium and biotin in addition to the multi vits & mins.

KappArest™ (BRC)
Provides a blend of proven anti-inflammatory plant extracts and antioxidants with BioPerine which enhances the uptake and efficiency of these ingredients. The formula was developed to beneficially modify NF-kB (nuclear transcription factor kappa B) which influences an inflammatory gene related cascade and many other pro-inflammatory cytokines.

Cognitive Enhancer (BRC)
Supplies acetyl-l-carnitine, GPC-Choline (glycerophosphorylcholine), Ginkgo Biloba extract & Huperzine-A for support of acetylcholine levels for cognitive function and brain support.

Bio-D-Mulsion Forte (BRC)
Provides 2,000 iu per drop of emulsified vitamin D3. A product that has been proven to raise vitamin D levels.

Arthred Powder (ARG)
A patented, pre-digested collagen powder that has been proven to reduce articular joint arthritic pains and reduce the need for pain medications. In addition, it has also been useful to heal the gut lining and support skin health.

Lutein 20 mg (ARG)
Provides 20 mg of lutein and 1 mg of zeaxanthin, primary macular carotenoids to protect the macula from the phototoxicity of blue light.

Vitamin D3 Complete (ARG)
Provides the four fat soluble vitamins of A, D, E, & K in a balance that could be disturbed if taking a higher dose of just one of these nutrients over time. The product is preservative free and chemical free and comes in fish gelatine caps. These nutrients are vital for a balanced immune response especially in the mucosal immune system, and are often required in those individuals with auto-immune conditions.

Discussion. *Please describe (1) the strengths and limitations of this case report including case management, (2) the literature relevant to this case report (the scientific and clinical context), (3) the rationale for your conclusions (eg, potential causal links and generalizability), and (4) the main findings of this case report: What are the take-away messages?*

Strengths and limitations of this case report including case management
The strengths lie in the appreciation of the historical health history in terms of identifying what nutritional changes to implement. As has been discussed on a number of occasions in the case report, it is fully acknowledged that the ability to implement a grain free diet was facilitated in most if not all part by this patient's life counsellor. The longevity of the success of the programme was its efficacy on a biological or biochemical level, however.

The literature relevant to this case report
The literature that is relevant is found in the form of books such as David Perlmutter's Grain Brain, but has also been informed by Loren Cordain's work on the paleo diet. The research for my own book entitled The Insulin Factor (2004) also taught me about the negative impact of a carbohydrate dominant diet. Another book related to this case is "Wheat Belly" by Dr William Davis**.**

The rationale for your conclusions
An assessment of W.D.'s typical daily food intake revealed the frequent intake of grains and her carbohydrate dominant diet. The link between this simply fact and her weight gain, fatigue, arthritic symptoms and more besides is perhaps the most simple conclusion at which to arrive, at least for a Nutritional Therapist with some experience, and perhaps with no experience too.

The main findings of this case report: What are the take-away messages?
This is a case followed and observed over two years with five face-to-face appointments. It has been highlighted and discussed that this patient had invaluable help from a counsellor who supported the necessary changes. That aside, the fact that the changes produced such positive results and on a consistent level over the 24 months, and still are, reflects the relevance of addressing the carbohydrate and grain consumption in individuals who struggle with their weight and have a potential host of other inflammation-driven conditions.

In this way, this is a good example of a person who combined attitudinal change with an effective nutritional programme and who persevered day in and day out to achieve what she valued highly: her good health.

What instils this in an individual is not something we are taught in this case, but does prompt me to ask that question: what makes someone decide to commit to change to achieve an improvement in health?

Patient Perspective. The patient should share his or her experience or perspective of the care in a narrative that accompanies the case report whenever appropriate.

"So much for wholegrains being good for you!" exclaimed W.D. in one of the conversations we had about the mis-information fed to the public about what foods are supposed to be good for us. W.D. is deeply impressed with the influence on her health that the change in diet has had. It has not only resulted in her noted health improvements, described above, but also in a resolution of her addiction too. W.D. nor I can separate the biochemical addiction from the psychological and appreciate the necessary support of her life counsellor who ultimately got W.D. through the process when she would not have done on her own.

Informed Consent. *Did the patient give the author of this case report informed consent? Provide if requested.*

The patient is not aware her case history is being used, and all identifiable data has been removed. W.D. are not her real initials.

Case Report Submission Requirements for Authors

1. Competing interests. *Are there any competing interests?*

None Known

2. Ethics Approval. *Did an ethics committee or Institutional Review Board give approval? If yes, please provide if requested.*

This case was not presented to an ethics committee.

3. De-Identification. *Has all patient related data been de-identified?*

All patient data has been re-identified

4. Author. *Name of Author and practice*

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