BDA The Association of UK Dietitians

Mental Health Specialist Group

Practice Guidance: Veganism and Eating Disorders

Version 5

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Introduction:

The aim of this practice guidance is to provide a framework for dietitians working with patients with eating disorders who have adopted a vegan diet. Practice in this area varies widely and this document will provide considerations for making the most clinically appropriate, evidence informed, decisions for the treatment provided. This document will support the recent joint publication between the Royal College of Psychiatrists, BDA and BEAT regarding considerations when treating vegan patients with eating disorders (1).

Research suggests that there are several reasons why an individual may choose to adopt a vegan lifestyle, ranging from external concerns such as for the environment (2) (3), dietary sustainability (4) (5) and ethical concerns (6). Furthermore, there are internal concerns such as overall health in relation to disease prevention (7) (8) and weight loss (9) (10). It is important to distinguish between following a vegan diet and following a plant-based diet (PBD) as a PBD will contain small amounts of animal-based foods, even though the diet is predominantly from plants. Individuals who follow a PBD do not seek to exclude animal products from non-dietary aspects of their lifestyle (11).

Eating a healthy balanced diet is important in maintaining physical health and reduces the risks of other illnesses or diseases later in life. A healthy balanced diet will therefore require an individual to eat a wide variety of foods, in the appropriate proportions, to maintain an appropriate body weight where their body can function – in females a key marker of this is menarche. Furthermore, in children and adolescents their diet needs to ensure that they have enough nutrition to ensure they grow in height and develop through puberty.

Understanding veganism:

The Vegan Society defines veganism as 'a way of living which seeks to exclude, as far as is possible and practical, all forms of exploitation of, and cruelty to, animals for food, clothing or any other purpose'. It is therefore an ethical movement, which is a legally protected characteristic equivalent to Halal or Kosher diets.

In 2016, The Vegan Society **Invalid source specified.** worked with a leading market research company and surveyed 10,000 people aged 15 years and over across England, Scotland and Wales and found the following:

- At least 1.05% of the population aged 15 and over (at least 542,000 people in Britain) are now following a vegan diet - a significant increase since the last estimate of 150,000 ten years ago.
- The increase in the number of people adopting a vegan lifestyle appears to be driven by young people making more ethical and compassionate choices. Indeed, close to half of all vegans are in the 15-34 age category (42%) compared to just 14% who are over 65.
- Most vegans live in urban or suburban areas (88%) compared with rural areas (12%) and this is reflected in London, where 22% of all vegans in Britain live – more than any other region.
- Twice as many vegans identify as female (63%) than male (37%)

Many religions support healthy eating, the spreading of peace and respect for animals and the environment. While these ideologies do not always directly translate to the adoption of a vegetarian or vegan diet, they may be interpreted this way by faithful followers. However, most religions will also advocate the health and wellbeing of their followers, and therefore necessity will overrule prohibition if a person's physical or mental health may be at risk i.e. when no other suitable alternative is available it is acceptable to have a medicine, product or food that may not be vegan (13).

Veganism and health:

Many people who adopt a vegan diet state that there are numerous health benefits of doing so. However, it is worth noting that a comprehensive report was released by the Federal Commission for Nutrition (FCN) from Switzerland in 2018 (8) and this report investigates the benefits and risks of following a long-term vegan diet. The report identifies the following categories of non-communicable health problems:

- Obesity / Overweight
- Type 2 Diabetes
- Cardiovascular disease
- Cancer
- Bone frailty
- Irritable Bowel Syndrome (IBS)
- Fertility
- Psychiatric illness
- Eating disorders

This report was unable to conclude that following a vegan diet was beneficial in any different ways than other dietary choices such as vegetarian and it highlights the need for future research specifically into veganism as a therapeutic diet (8). Furthermore, the German Nutrition Society does not recommend a vegan diet for the following: pregnant women, lactating women, infants, children, or adolescents (14).

Nutritional considerations of a vegan diet:

The Vegan Society states:

> 'Well planned plant-based diets are rich in protein, iron, calcium and other essential vitamins and minerals. The plant-based sources of these nutrients tend to be low in saturated fat, high in fibre and packed with antioxidants, helping mitigate some of the modern world's biggest health issues like obesity, heart disease, diabetes and cancer'.

Concerns are raised when an individual starts to follow a vegan diet for the primary reason of either inappropriate weight loss, body shape control or avoiding 'scary' or 'fear' foods rather than the ethical, environmental, or religious reasons that may otherwise drive veganism. Vegans need to ensure they eat a wide variety of foods and find suitable plant-based alternatives for meat and dairy products. Understanding this, means that at times people following a vegan diet may need to eat a food purely to ensure their nutritional adequacy (in addition to the regular vitamin supplementation recommended) and this highlights the importance of healthy nutritional planning focusing on replacement and not dietary restriction.

If not vigilant around their diet vegans could experience nutritional deficiencies. The list below highlights the key potentially vulnerable nutrients when following a vegan diet and their sources from within the diet:

- **Protein** – good sources include chickpeas, legumes, beans, lentils, tofu, nuts, seeds and soya milk alternatives. Some research suggests that vegans require a higher protein intake due to bioavailability of plant-based sources.

  It is important to consider the type of protein and aim for alternative protein sources so that all essential amino acids are provided via the dietary intake. Good examples of this include soya and vegan Quorn, quinoa, buckwheat, and hemp seeds.

- **Calcium** – The best sources are, fortified plant alternatives to milk and yoghurts, fortified soya and linseed bread, calcium-set Tofu. While plant foods containing smaller but noteworthy amounts of calcium are: kale, pak choi, okra, spring greens, dried figs, almonds, sesame seeds, sunflower seeds.

- **Essential fatty acids** – Walnuts and seeds such as chia, ground linseed (flaxseed) can be added to meals.
    - Note - six walnut halves (20g) or a tablespoon of chia seeds or ground linseed would meet the minimum requirement for essential omega-3 fat.
    - In addition to this, it is advised that vegans consume oils such as vegetable (rapeseed) oil, linseed (flaxseed), hemp seed and walnut oils
    - Concerns have been raised about the quality of fat in a vegan diet as it does not contain long-chain omega-3 fats (EPA and DHA) from oily fish. These are known to play a vital role in the development of the retina and the central nervous system. If a good plant-based source of short-chain omega-3 fat is consumed daily, some of it can be converted into the long-chain form.

- **Iodine** – The amount of iodine in a plant food varies depending on how much is in the soil the plant is grown in. Although seaweed is a rich source of iodine, there are several reasons why it may not be the best option. The iodine content of seaweed is variable, sometimes too high and some types are contaminated. Iodised salt is not an appropriate option because public health authorities recommend that we cut down on salt. Therefore, supplementation is usually recommended. Alternatively, there are now a few iodine-fortified milk and yogurt alternatives available (Oatley have just launched iodine fortified 'oatgurt') that may be a useful source for people consuming enough of this type of product daily.

- **Iron** – Fortified breakfast cereals, wholegrain cereals / bread, green leafy vegetables, pulses, legumes, tofu, nuts, seeds (chia seeds, linseed, hemp and pumpkin), dried fruit, molasses cocoa.
    - Note that to achieve optimal absorption of non-haem iron it should be consumed with a source of ascorbic acid (vitamin C) and citric acid.

- **Selenium** – The amount of selenium in a plant food varies depending on how much is in the soil the plant is grown in. The selenium content of Brazil nuts is particularly variable, but can be high, and eating two a day may meet the nutritional requirement. However, research suggests that there is a concern around levels of barium and radium in Brazil nuts, so daily consumption is cautioned (15). Therefore, supplementation should be used to guarantee a reliable selenium intake.

- **Vitamin B2 (Riboflavin)** - Wheat germ, green leafy vegetables, yeast extract, avocados, almonds, soya beans, fortified plant milk

- **Vitamin B12 (Cobalamin)** - Fortified cereals, fortified plant alternatives to milk and yoghurt, fortified dairy-free spreads, yeast extract, fortified nutritional yeast flakes
    - Vitamin B12 supplements should be considered as it takes diligent dietary planning to get sufficient B12 from fortified foods (The Vegan Society, 2016)

- **Vitamin D2** – Fortified margarine, fortified plant alternatives to milk and yoghurt, fortified cereals, sunlight
    - Vitamin D3 used in fortification is typically in the form of lanolin derived from wool fat and therefore not vegan. Supplementation is advised for everyone during the autumn and winter months as a minimum. Supplements containing vegan friendly vitamin D3 from lichen are available.

- **Zinc** – wholegrains, legumes, fortified soya products, tofu, walnuts, cashew nuts, chia seeds, ground linseed, hemp seeds and pumpkin seeds.

Complete supplementation is not thought to be essential for vegan health, but additional supplementation should be an important consideration during nutritionally vulnerable times such as: pregnancy, breastfeeding, childhood, and adolescence. The table below highlights the nutrients that need to be considered in relation to supplementation of a vegan diet.

Table 1 – Supplementation considerations

Nutrient	Supplementation considerations
Vitamin B12	Fortified foods and/or supplement
Vitamin D	Autumn & winter supplementation as a minimum
Iodine	Fortified plant milk or supplement
Selenium	Eat a couple of Brazil nuts daily or use supplement
Omega-3 fat	Long chain omega-3 fat microalgae supplements exist but not essential n.b. more important consideration during pregnancy, breastfeeding & childhood

Dental considerations of a vegan diet

Dietitians should be mindful of the possible oral health implications of their advice, and preventive strategies to reduce the risk of concurrent oral disease. Although varying in pattern and prevalence depending on the type of eating disorder, patients may present with (16).

- Dental decay due to frequent consumption of foods and beverages with a high content of free sugars - Free sugars are added monosaccharides and disaccharides as well as sugars naturally present in honey, syrups and fruit juices. They do not include sugars found naturally in whole fresh fruit and vegetables and those naturally present in milk and milk products (17).
- Increased thinning, chipping, and sensitivity of the teeth due to frequent vomiting and/or high acidic food and beverage intake leading to erosion of the tooth surface (dental erosion).
- Dry mouth and oral thrush (candida) because of reduced salivary flow (xerostomia). This may be due to; dehydration, the use of laxatives or diuretics, as a side-effect of anti-depressant medication (such as SSRIs) and/or because of frequent vomiting.
- Mouth ulcers, a sore mouth and tongue (glossitis), and gum disease due to nutritional deficiencies.
- Enlarged salivary glands (sialadenosis) due to frequent vomiting.

A vegan diet may compound these issues further due to the substitution of animal derived foods with high free sugar and acidic alternatives (18). Research suggests that adopting a vegetarian diet may increase the risk of a patient having higher levels of dental erosion than those with an omnivorous diet (19). This trend may also be expected in the vegan population. Other health conscious dietary habits such as drinking hot water or water with lemon slices (18) diet carbonated drinks, fruit flavoured waters (20) and fruit/herbal teas (21) or fruit juices, contribute to dental erosion due to their acidity(21). Some vegan suitable snacks such as dried fruits, protein and cereal bars and fruit-based smoothies are high in free sugars that contribute to tooth decay (16). Furthermore, many vegan toothpastes are specifically marketed as 'free from fluoride' or have insufficient levels of fluoride to be effective in prevention against tooth decay and acid erosion (16,17).

The following preventive advice is based on current guidelines for prevention of oral disease, however when treating someone with an eating disorder there must be a balance between this and the essential nutritional and psychological rehabilitation that our patients will require. As treatment progresses, and the patient's nutritional demands are stabilised, this should be reviewed and moderated in line with national oral health guidelines (16).

Key oral health advice for patients with eating disorders Invalid source specified.**,** Invalid source specified., (19, 21, 22, 23).

- Encourage regular examinations by a dentist and an open discussion about oral symptoms and their eating disorder diagnosis.
- Limit the consumption of high free sugar foods/drinks/feeds to mealtimes (3-4 times per day) if possible, and practical, during the re-feeding and meal planning phases of eating disorder treatment.
    - Ideally, a maximum combined volume of 150ml of fruit juice or fruit smoothies per day at mealtimes is recommended due to the high level of free sugars.
    - For patients who need to eat up to 6 times a day, between meal snacks should be low in free sugars or sugar free if possible.
- Recommend drinking water or unsweetened plant milk only between meals.
- Reduce the amount and frequency of intake of acidic drinks.
    - Recommend drinking acidic drinks such as fruit juices / smoothies and carbonated drinks through a straw placed at the back of the mouth.

- Reinforce the importance of the use of a fluoride toothpaste twice a day (containing at least 1350ppm fluoride), and the use of a fluoride containing mouth-rinse (0.05% NaF) once a day at a different time to brushing.
- Advise patients not to brush their teeth immediately before or after vomiting or consuming acidic food or drinks. Rinsing with water, chewing sugar free gum, or using a fluoride mouth-rinse following these episodes is a preferred option.

Vegan specific oral health advice:

- Encourage regular examinations with a dentist and discussion about adoption of a vegan diet.
- Discuss that vegan toothpastes are available with adequate fluoride levels for prevention of tooth decay and erosion and encourage their use. Brands include; Colgate 'Smile for Good', Kingfisher Natural Toothpaste 'Fennel/Mint with Fluoride', Co-op Freshmint.
- Consider recommending low sugar, high calorie vegan snack alternatives such as: nut butters, nuts, dairy free yoghurt, and unsweetened milk alternatives.
    - A vegan low sugar snack list is attached to the meal plan in the appendix.

The Vegan Eatwell Guide

Moving from the Eatwell plate to the Eatwell guide:

In 2016 the Eatwell plate was replaced with the eat well guide and aside from the removal of the knife and fork a few subtle changes were introduced. The key difference is that the food group segments were resized, to reflect the national trend towards obesity, and therefore the Eatwell guide now represents healthy eating with an aim of weight loss.

The key changes are as summarised below:

- The purple section has gone from 'foods and drinks high in fat and or sugar to a significantly smaller section for 'unsaturated oils' with the advice to be used in small amount.
- Social foods such as cakes, biscuits, crisps, chocolate and sweets are now in their own box to highlight that they should not be part of an everyday diet.
- Daily calorie limits advertised
- Nutrition labels added to encourage the purchasing of foods lower in fats, salt and sugars when shopping
- Fruit juice removed from the fruit and vegetable section and limited to 150ml/day only (24).

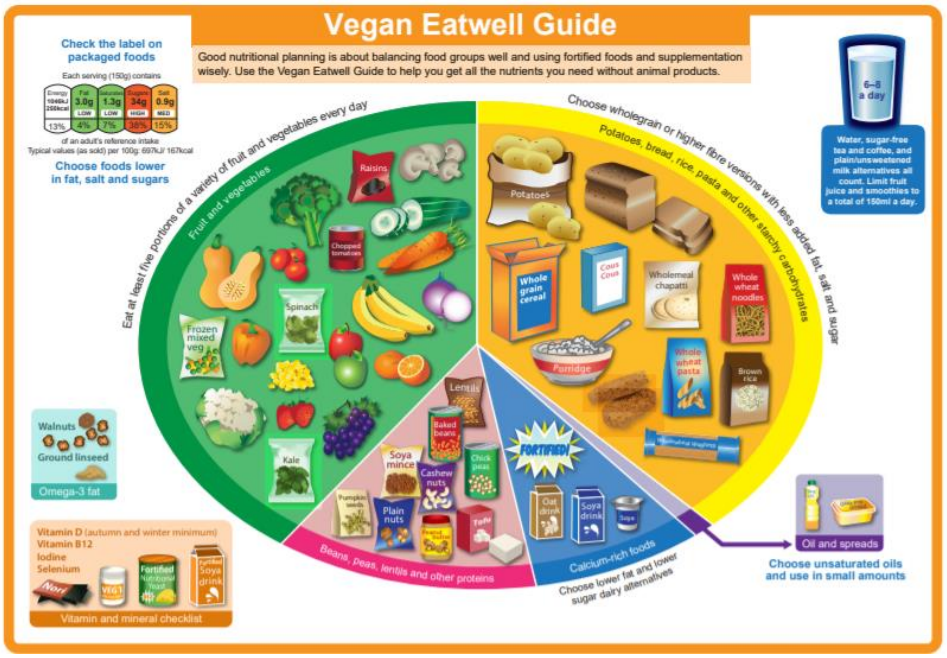
This update has proved problematic for dietitians working within eating disorders as their patients may be required to gain weight and therefore their nutritional requirements and food portions may be significantly greater than those advised. Furthermore, the addition of daily calorie limits and the encouragement for checking labels is something that eating disorders clinicians advise against. In the early stages of recovery, it may be easier for some patients to have nourishing drinks and therefore fruit juices and smoothies can help meet a patient's daily calorie requirement. So some patients may require more than 150ml fruit juice.

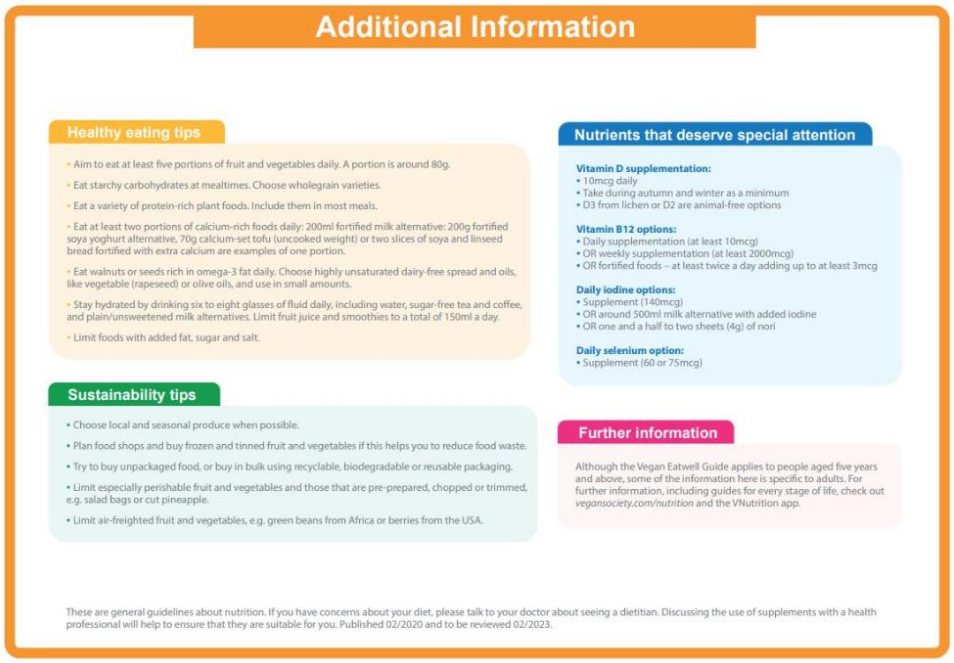
The vegan Eatwell guide:

The vegan Eatwell guide was launched in 2020 and highlights the benefits of a well-planned, appropriately supplemented, vegan diet. Unlike the Eatwell guide it has moved away from daily calorie limits, advocates the appropriate nutritional supplementation required for a vegan diet and has a strong focus on sustainability of the diet (25). However, for patients with eating disorders the difficulties highlighted above remain and are potentially exacerbated by the further restriction in variety of foods that following a vegan diet requires. Consequently, the 'real food pyramid' is undergoing a revamp to have a vegan version and this may be more suitable for this client group (hopefully it will feature in version 4 of these guidelines).

The vegan Eatwell guide can be found below and permission to use the pictures was granted by The Vegan Society.

Figure One – Vegan Eatwell Guide





The Vegan R.E.A.L food pyramid

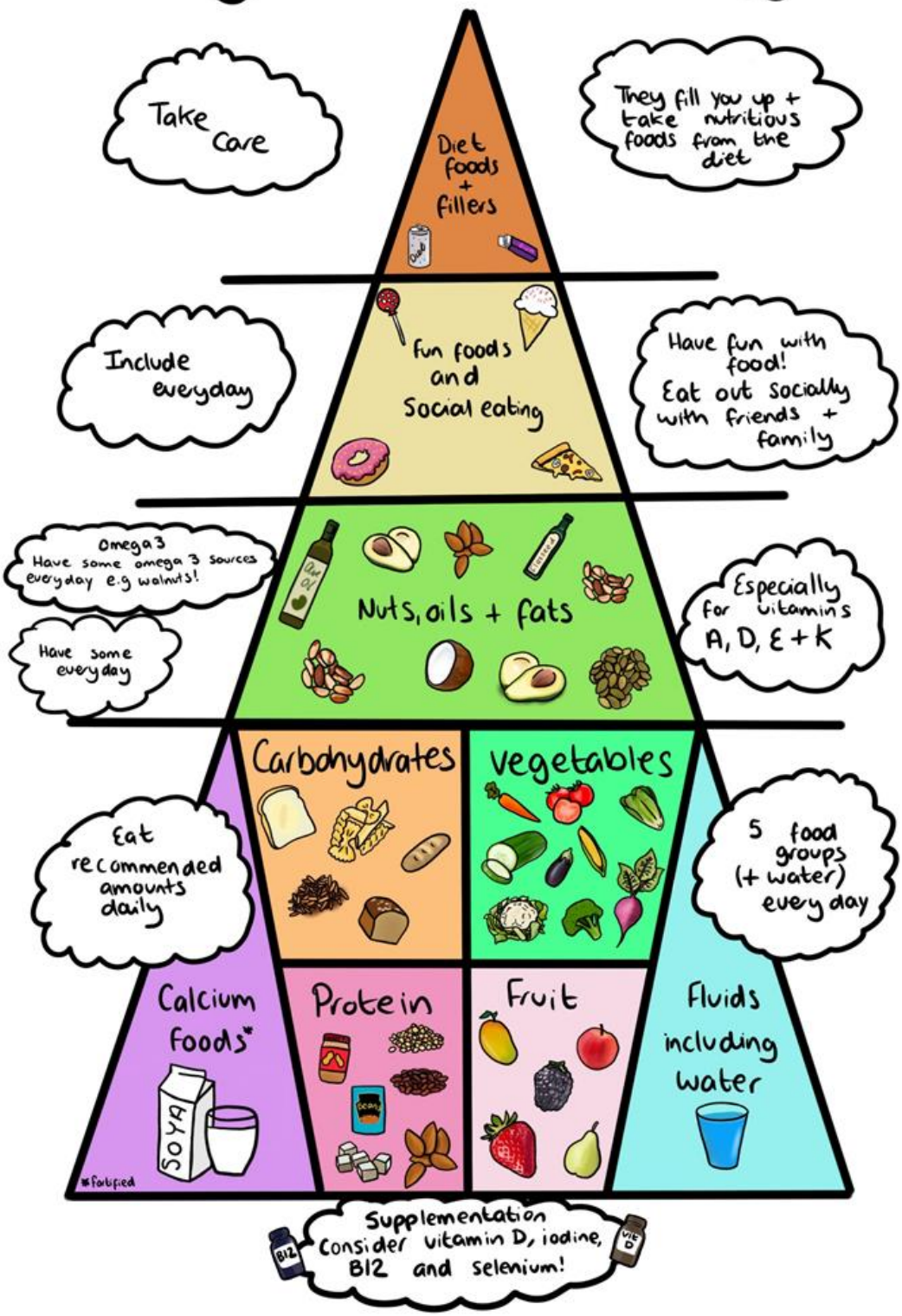
The Recovery from Eating Disorders for life (REAL) Food Guide was produced in 2018 (26) to support recovery goals for those experiencing eating disorders. It recognises that recovery from eating disorders requires emphasis on choosing a variety of foods, including energy dense foods. It also focuses on the idea of 'fun' or 'social' foods in recovery; acknowledging that these foods are part of normalised eating behaviours.

A vegan R.E.A.L food pyramid was designed to support clients who are seeking recovery from an eating disorder who wish to maintain a vegan diet. Continuing a vegan diet in recovery may not be appropriate dependent on individual needs and appropriateness should be assessed by a specialist dietitian. The meal plans in appendix 3 have been analysed and have been used to inform the creation of the food pyramid. It demonstrates that dietary requirements can broadly be met within the confines of a vegan diet.
The food pyramid is designed to be used by dietitians to support adults with an eating disorder. Children are likely to have greater requirements owing to growth and therefore it is not appropriate for use with this cohort.

Notes regarding the meal pattern:

- The analysis has demonstrated it is theoretically possible to meet the nutritional needs for weight restoration for those in eating disorder recovery. However, it should be noted that practically it may be difficult to implement given the large amount of fun/social foods required to meet energy needs. This is due to the lower energy levels of plant-based foods which make up the bulk of the vegan diet. It should also be noted that early satiety, a well noted issue in eating disorders, may mean the volume of food required is difficult to achieve.
- Protein levels, particularly at weight maintenance energy levels (2,000kcal) made up a smaller proportion of the diet (9% and 16% respectively) than national recommendations (20% of diet). This was due to the higher fat intakes required via snack and fun/social foods to meet energy requirements.
- A vegan supplement would be required to meet vitamin D, selenium, iodine, B12 and omega 3 as these would not be met across the majority of the proposed meal plans. Calcium may be required dependent on intakes of calcium rich foods e.g., Calcium set tofu.
- On analysis iron levels exceeded daily EAR for most of the meal plans, however due to reduced bioavailability of plant-based iron sources a supplement may be required. However, it is beneficial to include foods rich in vitamin C in meals due to the reduced bioavailability of plant-based iron sources. Iron supplementation is not routinely recommended but may sometimes be required particularly for those who are menstruating.

The vegan R.E.A.L food pyramid



Graphics by Megan Hughes. Adapted from the R.E.A.L Food Pyramid (Hart 2018) by Lisa Waldron RD

Nutrients that require special attention

Vitamin D Supplementation

- 10 mcg /400IU supplement daily
- Take between October- March as a minimum
- D3 from lichen or D2 are animal free options

Vitamin B12 options

- Daily supplementation (at least 10mcg)
- OR weekly supplementation (at least 2000mcg)
- OR fortified foods- at least twice a day adding up to at least 3mcg

Daily Iodine options

- Supplement (140mcg)
- OR around 500ml milk alternative with added Iodine
- OR one and a half to two sheets (4g) of nori

Daily Selenium options

- Supplement (60 or 75mcg)

Daily Iron Options

- Good sources include fortified breakfast cereals, lentils, chickpeas, kidney beans, tofu, cashew nuts, chia seeds, shelled hemp seeds, pumpkin seeds, kale, apricots and dried figs.
- Pair plant based iron sources with vitamin C foods to aid absorption

Additional information

- Include starchy carbohydrates at each meal
- Eat a variety of protein rich plant foods and include them in most meals
- Eat at least 3 portions of calcium rich foods daily:
    - 200ml fortified milk alternative*
    - 200g fortified soya yoghurt alternative
    - 100g calcium-set tofu (uncooked weight)
    - 2 slices of soya and linseed bread fortified with extra calcium
- Eat walnuts (6 halves) or seeds rich in omega-3 fat daily. Choose highly unsaturated vegetable based spreads and oils, like rapeseed or olive oils.

*Alpro soya junior is required as the fortified milk choice as alternatives would require much larger volumes and would not be suitable for a refeeding meal plan

Eating Disorder context:

Many people try and make sensible dietary changes to facilitate a healthier lifestyle and or lose weight. However, when sensible dietary changes escalate disordered eating or eating disorders can develop. Anorexia Nervosa is a serious mental illness where sufferers actively maintain a low body weight by a combination of dieting (or restrictive behaviours), vomiting, using laxatives (diet pills or diuretics) or excessively exercising. This in turn can lead to serious effects of starvation on the body.

According to BEAT, the UK's eating disorder charity (27):

- Around 1.25 million people in the UK suffer with an eating disorder.
- Around 25% of sufferers are male
- Although many eating disorders develop during adolescence, they can also develop earlier or later in life.

Many clinicians who treat patients with eating disorders will be all too aware that the diet can be manipulated in many ways to achieve weight loss or maintain a certain body shape. Each patient will be different as some will have restricted their daily food intake gradually over time or more quickly over several weeks, adopting unnecessary dietary exclusions e.g., dairy free or wheat free, limiting carbohydrates and or fats, or refusing to eat after a specific time in the day. Others may have used compensatory behaviours to control their weight e.g., regular or excessive exercise, diet pills, vomiting, abusing laxatives or a combination of the above.

Dietary restrictions may start with 'healthy eating' – cutting out high calorie social foods like cake, biscuits, sweets and puddings. This could then lead to a reduction in portion sizes, missing meals and hiding food. Often during this time, some people will report that they become pescatarian, vegetarian or vegan. However, these socially acceptable restrictions may mask the development of an eating disorder – and therefore may be a sign of their illness.

The link between patients adopting a vegetarian diet and disordered eating is well documented (28, 29, 30, 31, 32). Zuromski 2015 found that 34.8% of patients in residential treatment for an eating disorder were a lifetime vegetarian, compared to 6.8% in a non-clinical group who also had a more varied diet (28). However, O'Connor et al., 1987 observed more than 25 years ago that for most eating disorder patients, avoidance of meat does not precede the onset of the eating disorder symptoms (33). About half (45 - 54%) of patients seeking treatment for anorexia nervosa reported practicing some form of a vegetarian diet (29). Furthermore, 61% said they believed there was a relationship between their eating disorder and choosing to become a vegetarian (29). They also found that people with an eating disorder on a vegetarian diet reported eating disorder symptoms before choosing to be vegetarian, with an average of one year between the development of eating disorder symptoms and becoming vegetarian (29). In other words, vegetarianism is a perfect guise for anorexia and other eating disorders as it is perceived as both socially and environmentally friendly – thus drawing less concern from others.

However, over the past few years, clinicians working with patients with eating disorders have also noted a rise in the number of patients reporting to be vegan although there is much less research into this area. Indeed, some researchers hypothesise that individuals who exhibit extreme eating behaviours are more likely to adopt a meat free diet, and this may act to 'camouflage' ED symptoms (28, 29, 34). In 2018, researchers in Germany investigated the effect that vegetarianism and veganism could have on 'orthorexic' behaviours. Orthorexia is not a recognised eating disorder, but some researchers believe that a subset of patients with ED's have a pathological obsession with eating healthy food (35). This research suggested that individuals following a vegetarian or vegan diet showed an increase in orthorexic eating

behaviours compared to those who consumed meat (36). Furthermore, some researchers go as far as to suggest that adopting a vegan diet could be considered an 'extreme behaviour' as it is the furthest away from the western traditional omnivore diet (37).

In contrast, some research suggests that adopting a vegan diet may help individuals who are suffering with disordered eating. In 2019, a qualitative study of 10 individuals found that those who had previously struggled with poor body image and disordered eating felt that adopting a vegan diet and lifestyle enabled them to reduce their focus on body image and have a new connection with the vegan sub-culture (38). Furthermore, researchers comparing 578 participants assessed in relation to disordered eating, health related behaviours and attitudes noted that those identifying as vegan scored significantly lower regarding eating disorder behaviours than those identifying as omnivore. Additionally, there was no difference between vegans and omnivores in relation to body mass index, eating styles, alcohol consumption, exercise levels and smoking which suggests that veganism may reduce disordered eating behaviours but not have an impact on other health parameters (39). Whilst it is important to acknowledge both sides of the argument, other researchers have been concerned that these potential associations have been identified when there have been flaws in research methodology (40).

Food is packaged and produced in a way that requires a vegan to read nutritional labels to identify if a food is appropriate (see appendix 1 for a list of ingredients and E-numbers to help with this). This is also a behaviour that many people with eating disorders develop and can escalate during times of poor mental health.

Whilst a link may exist, veganism should not be regarded as a causal factor in eating disorders. However, in susceptible individuals (those with family history of mental health problems, those with low self-esteem, obsessive traits, and control) following a vegan diet could prompt additional obsessive or restrictive eating behaviours.

Key points for an Eating Disorder team to ask to identify if a vegan diet may be related to the development of an eating disorder:

1. Remember to check if the veganism is part of a religion e.g., Hare Krishna. If a person is following a vegan diet as part of their religion, it is likely to not be associated with their eating disorder. However, it is important to note that most religions endorse 'necessity over prohibition' i.e., people can be exempt from dietary restrictions or fasting for the sake of their physical and mental health.

2. Does your family follow a vegan diet? What does your family think about your decision to eat a vegan diet? This is particularly key for children and young people who are having family-based treatment (41).

3. When did you decide to adopt a vegan diet? If this does not pre-date the onset of the eating disorder and in a context of growing dietary restrictions, then this can be considered as a 'red flag' for clinicians.

4. Was the initial decision to adopt a vegan diet made based on concern for animal welfare or environmental sustainability etc... or was it a health-based decision? If for health concerns or dietary changes were motivated by inappropriate weight loss this can also be considered a 'red flag'.

5. Is there any 'growing' restriction within the diet? i.e., did this start off as 'healthy eating' then vegetarianism or restrictions of food groups. Are there any self-

diagnosed or not medically confirmed restrictions in the diet e.g., lactose free or gluten free?

6. While acknowledging that following a vegan diet will require a level of nutritional vigilance and checking of ingredients, when looking at foods to identify suitability are there additional nutritional considerations that are in place e.g., avoiding foods with 'red' labels or those with high carbohydrate / fat content

7. Are you restricting their diet or finding suitable balanced alternatives? Restriction of 'scary' or 'fear' foods and an increase in 'safe' foods (see appendix 2 for a vegan fat challenge)

8. Do you allow yourself to eat high calorie foods socially? E.g., vegan muffins, brownies, chips, crisps, cheesecake, or chocolate cake. Are other people allowed to cook for you? I.e., is the concern about the food being vegan or is it that the illness is trying to control the preparation methods and portions etc.

9. Are ethical choices seen in non-food aspects of life e.g., clothes, toiletries, use of free time?

10. How are natural errors managed? With an understanding that nobody is 100% perfect or is there a sense of guilt, shame, or further exclusion from the diet.

11. Social effects of eating – can you eat in front of others without knowing the calorie content of the meal/snack, can you eat in front of others, in restaurants etc…?

12. Social media: is your vegan diet on social media, do you follow fellow vegans and other people with eating disorders? We know that frequent users of multiple social media platforms are more likely to develop a mental health problem (42). Note – responsible social media use is appropriate and not linked to disordered eating e.g. following The Vegan Society etc. would be appropriate but not a site that advertises the benefits of dietary restriction.

If an individual admits that they are using their vegan diet to restrict their diet professionals could discuss allowing a patient to continue with non-food ethical principles that veganism embraces for the duration of their treatment. Ideas can include purchasing cruelty free makeup, not purchasing leather goods, purchasing vegan clothes, using vegan laundry powders/washing up liquids, using environmentally friendly and ethical banks/energy providers etc. Then, once weight is restored and the patient is engaged in treatment, dietary restrictions can be examined and discussed.

Refeeding on a vegan diet:

The initial goal for many patients who require physical health restoration is re-establishing regular eating and, if needed, weight gain. For some patients this may result in significant psychological distress. If a patient has adopted a vegan diet during their illness, it may be less distressing for them to initially start this process while remaining vegan (Note – in the family-based approach for children and adolescent with eating disorders this must be in agreement with their family). Careful monitoring of energy increases, physical health symptoms and blood biochemistry is indicated with intensive dietetic support during this time is essential. However, if the treating team and or patient's family feel that the vegan diet is strongly linked to the development of the eating disorder, then the goal should be to re-establish their pre-illness diet.

During the refeeding phase, many patients may benefit from an energy dense diet as they are not used to eating normal volumes of foods. The steady increments of food required can cause significant psychological distress for both the young person and their family. Some of the characteristically low-calorie and bulky sources of plant protein rich foods can potentially impact physical health recovery due to early satiety caused by delayed gastric emptying.

Re-feeding medication

Currently there are no vegan friendly re-feeding medications. In life saving situations the decision to use a non-vegan medication to manage re-feeding syndrome needs to be considered with the treating team and guidance can be found in the consensus statement from The Royal College of Psychiatrists, 2019 (1).

There are a vast number of vitamin and mineral tablets as well as B vitamin compounds and thiamine that are vegan and can be purchased over the counter or online. However, in life saving situations or where there is medical risk using a non-vegan product/medication may be necessary. Your local pharmacy team will be able to advise on developing a local policy regarding clients providing their own supplementation.

Information regarding why some drugs are not suitable for vegetarians, and therefore vegans, can be found online (43).

Vegan approved sip feeds, enteral feeds and vitamin and mineral supplements

It is common practice in an in-patient setting for eating disorder teams to help people manage their prescribed calories by offering a sip feed if they are struggling to either eat a specific meal/snack or finding the volume of food required too difficult. However, there is no nutritionally complete vegan approved enteral feed. Therefore, this could slow recovery of an individual by not having this alternative strategy to help them meet their required nutritional prescription. Below are the reasons that the current main manufacturers give for their products not being vegan:

- Abbott do not produce a vegan sip feed or enteral feed as their products contain milk proteins. Some oral nutritional supplements contain E120 a food colouring (cochineal) for strawberry flavoured products (44).

- Nutricia do not produce a vegan sip feed or enteral feed as many products contain milk proteins, in some products the vitamin D is derived from the wool of healthy sheep whereas some products contain carminic acid (45).

- Fresenius Kabi do not produce a sip feed or enteral feed that is suitable as most of their products contain cow's milk protein and the carrier for vitamin A is from fish gelatine and contain fish oil (46).

However, it is worth noting that the very definition of veganism recognises that the avoidance of animal use is as far as possible and practical. A vegan may be willing to use a sip feed if there is no other alternative, in the same way that many vegans use medications that are tested on animals or contain animal products.

If a patient is at risk of refeeding syndrome, both in-patient and out-patient eating disorder teams may prescribe multi-vitamin and/or specific mineral supplement e.g., phosphate depending on blood test results and in line with local refeeding guidelines. None currently carry the vegan trademark (although in the latest formulation, Forceval soluble does not list any animal derived products (47).

Please note the follow is for information only and prescribing or using of these products should only be used within local and national guidelines

There are now vegan friendly ACBS prescribable products:

- **AYMES ActaSolve SMOOTHIE**
  - 297Kcal and 10.7g protein per 66g sachet (when made with water)
  - This is not nutritionally complete and to be used to supplement an oral diet not as sole source of nutrition
  - Flavours: Pineapple, Peach, Mango and Strawberry & Cranberry
  - For more information go to www.aymes.com

Please note the following is available although it is not ACBS prescribable:

- **Nutrinovo ProSource TF Plant**
  - 90kcal and 15g protein in 45ml sachet (no data on maximum dose per day)
  - This is not nutritionally complete and to be used to supplement an oral diet not as a sole source of nutrition
  - This product is designed for administering via NGT by the company advise that Nutrinovo can be mixed with another drink, best with fizzy drinks apparently
  - Suitable for halal and kosher diets
  - For more information go to: www.nutrinovo.com

Dietitians can also consider using the following options that may be more acceptable to their vegan patients if they do not like the above:

- Soya based products
  - Nutrison Soya / Nutrision Soya Multifibre (Nutricia)
    - 1kcal/ml and nutritionally complete in 1500ml,
    - The only animal derived part of this is the vitamin D which is derived from sheep's wool
  - Fresubin Soya Fibre (Fresenius-kabi)
    - 1Kcal/ml and nutritionally complete in 1,500ml
    - The only animal derived part of this is the vitamin D which is derived from sheep's wool

- Juice based products
  - Protein sources used are not vegan as they are derived from animal products
  - Note of clinical caution: advising these products may enhance some eating disorder cognitions around the need to avoid fats, and these products are

also not nutritionally complete

- Fat based supplements
    - Calogen (Nutricia)
        - 4.5kcal/ml neutral and banana flavour is suitable for vegan patients (not the strawberry flavour)
        - Should not be used as a soul source of nutrition.
        - Nutricia have a helpful recipe sheet for where calogen can be added to foods and drinks and this is available through their website.
        - Note that Calogen Extra is not suitable for vegan patients
    - Fresubin 5kcal (Fresubin)

- Carbohydrate based supplements
    - Polycal powder and liquid
    - Super soluble maxijul

Clinical note on other vegan friendly carbohydrate based supplements:

Nutricia Pre-Op - please note this is not approved for prescribing in primary care and should therefore not be recommended in primary care, but can be used in other care settings.

Nutilis clear and powder are only approved for the use in dysphagia patients as they are thickeners and not a carbohydrate supplement.

A recipe for an ONS mix that is close to Fortisip using ACBS approved products is:

5ml Calogen, 80ml Nutrison Soya, 15ml Polycal (liquid)

Please note the above recipe is NOT nutritionally complete and should therefore not be used as a sole source of nutrition, only to supplement an oral intake. Furthermore, Nutrison Soya and Polycal liquid can only be left open for 24hr. The nutritional breakdown can be found below.

Table 2 – Nutritional breakdown of ONS recipe compared to Fortisip and Fortijuice.

Nutrient	ONS Mix /100ml	Fortisip /100ml	Fortijuice /100ml
Energy	140kcal	150kcal	150kcal
Carbohydrate	19.1g	18.4g	33.5g
Sugar	4.5g	1.1g	14.1g
Protein	3.2g	6g	4g
Fat	5.6g	5.8g	0g

For patients who are not in hospital the following products are suitable for vegan patients requiring nutrition support:

- Slimfast advanced vitality – 220kcal and 20g protein per sachet (to add 250ml water – a higher calorie version could be made if the water was replaced by a suitable plant-based milk)
    - Strawberry & Blueberry Burst
    - Intense Mint Chocolate

However, it is worth noting that these products are marketed for weight loss are gluten free and have green tea added to 'boost metabolism' which may not be appropriate for some patients who are very ill and would have to be recommended with great caution as a result.

There are a few protein powders and drinks that are commercially available. Huel ready-to-drink website claims that it is a complete source of nutrition (48). It is a high protein meal replacement shake with added vitamins and minerals. The Huel website advises that the individual consults their doctor or clinician (48).

Table 3 – Nutritional composition of Huel – ready to drink and powder formulations (46)

	Ready to drink / 100ml (gluten free)	**Ready to drink / 2000ml portion**	**Powder / 100g (not gluten free)**	**Powder / 500g a day (recommended portion)**
Energy	80kcal	1,600kcal	400Kcal	2000kcal
Fat	3.72g	74.4g	13.1g	65.6g
Carbohydrate	6.78g	135.6g	37.1g	185.5g
Fibre	1 - 1.14g *	20 - 22.8g *	7.7	38.3g
Protein	4g	80g	29.5	147.5g
Salt	0.14g	2.8g	0.7	3.6g

* Vanilla compared to berry flavour

Note of clinical caution

There has been little research into the effects of having higher protein diets in patients who are underweight, especially children and adolescents. Therefore, these products may not be suitable as a soul source of nutrition for patients who are significantly underweight.

Furthermore, this is not an ACBS approved product and therefore has not gone through the strict regulation process that this requires. So Huel should only be used, with extreme caution, in some clinical settings.

Vitamin and mineral supplementation:

Boots offer a broad vegan supplement: 'Vegan A-Z wellness formula' which contains '24 vitamins and minerals, including 7 key nutrients that can be difficult to get in sufficient quantities from a plant-based diet: vitamin B12, vitamin D, selenium, calcium, iodine, iron and zinc.' This is marketed at those over 12 years old and over.

The Vegan Society market a daily vitamin and mineral supplement designed for vegans called VEG 1, which contains the following:

- Vitamin B12 25µg
- Iodine 150µg
- Vitamin D 20µg as D3
- Selenium 60µg
- Folic Acid 200µg
- Vitamin B2 1.6mg
- Vitamin B6 2mg

However, this is not nutritionally complete and is not appropriate for patients who are undergoing refeeding and may need prophylactic supplementation of Thiamine, Phosphate, Calcium or Magnesium. It is intended to supplement a normal vegan diet that may not meet an individual's full nutritional requirements.

Note of clinical caution

In lifesaving or high-risk situations, such as refeeding, medical monitoring is essential, and it may not be possible to avoid having a non-vegan medications or nutritional supplements and treatment in these circumstances should not be withheld (1).

Essential fatty acid supplementation:

Opti3 Omega-3 EPA and DHA

- Claims that each batch will have minimum of 300mg EPA & 500mg DHA
- 2 tablets a day will provide approximately:
    - Total Omega-3 916mg
    - EPA 326mg
    - DHA 532mg
    - DPA 58mg
    - Vitamin D3 200iu

Note: dose may differ from batch to batch

Folic acid supplement

Health Plus, nutrition for everyone – Folic Acid 400µg

Iron

Boots Iron tablets = 14mg
ASDA Wellbeing Iron = 14mg

In-patient treatment for patients with an eating disorder

Traditionally Specialist Eating Disorder Units (SEDU's) have found several challenges in accommodating the wishes of a vegan patient for several reasons: Firstly, because of the link with restrictive eating practices; secondly, due to the high volume of food required during the refeeding process being problematic for malnourished patients; thirdly, due to the lack of appropriate vegan ACBS approved supplements especially if naso-gastric tube feeding is required. Also, limitations in the catering systems at some SEDU's can also make supporting the vegan patient to restore weight extremely challenging.

Some units may consider an ACBS approved supplement that is juice based e.g., Fortijuce (Nutricia) or Ensure Plus Juice (Abbott) – as this will not be based on a dairy product and they contain smaller amounts of animal products as stated above. This middle ground may be more acceptable to patients. However, these products will not be nutritionally complete and therefore cannot be a sole source of nutrition and may exacerbate some eating disorder cognitions around fat avoidance.

A few SEDU's in the UK can facilitate a vegan diet, however, many do not offer it as a dietary choice for all their patients due to the perception of the restrictive nature of a vegan diet. Most units will try to facilitate a vegan diet in very specific circumstances i.e., for religious reasons or if they are happy that the vegan diet is not in any way linked to the onset of the patient's illness. There are a few hospital catering companies that produce high calorie vegan meals, and these can be very useful if a units catering system is not able to facilitate a full vegan diet.

If it is agreed that following a vegan diet is part of someone's illness, then most units will facilitate a vegetarian diet and use the admission to challenge the dietary restrictions imposed by the eating disorder. However, some units offer a phased exposure model i.e., during the refeeding process when re-establishing a sufficient oral intake is the primary goal, then dietary restrictions may be tolerated e.g., offering soya milk instead of cow's milk. As the level of psychological distress with eating and gaining weight decreases, these restrictions may be challenged and other normal components of the family or pre-illness diet may be reintroduced e.g., cow's milk, fish, or chicken etc. What is important is that each unit should decide on its therapeutic stance regarding veganism as it will be difficult to allow one patient and not another to follow this dietary choice.

Out-patient treatment

All specialist eating disorder teams will want to work with a patient to treat their eating disorder and for most patients this will not involve admission to a SEDU. Therefore, it may be possible for out-patient teams to work within a vegan meal plan, if appropriate, with guidance from a specialist dietitian. During the acute phase of treatment when physical health restoration is paramount if the patient is following a varied, balanced diet and gaining weight appropriately the risks of following a potentially restrictive diet are reduced. However, many patients who require physical health restoration have severely limited the number of foods in their diet and they therefore need intensive dietetic support to ensure the nutritional adequacy during this phase. An example of a 3,000kcal/day meal plan that is suitable for a vegan can be found in Appendix 3 with a comparison of vegan milk alternatives in Appendix 4.

With the family-based approach to treatment of eating disorders in children and adolescents, it will be key to identify what the parents will be able to tolerate and facilitate. If they agree with following a vegan diet and are capable of this – the treating team can consider this. However, if the family are not in agreement with their young person's vegan diet, then the therapeutic milieu is that you should go with what the parents feel is normal, and they can manage. Furthermore, a family may find that the required checking of labels, recipe

searches (although this should reduce with time) as well as the reduced selection of foods available may also collude with and maintain an eating disorder or be a risk factor for relapse. Treating teams may want to consider challenging the vegan diet later in treatment if they or the family think it is linked to the onset of an eating disorder but should be encouraged through treatment to get their child back to their pre-illness dietary intake.
On the other hand, some patients may report that the guidelines of a vegan diet may help them manage to achieve and maintain a healthy weight. This may be the golden opportunity for professionals to differentiate between an eating disorder and veganism – this may be the patient's opportunity to follow a vegan diet and restore weight whilst engaging in therapeutic work.

Veganism and social media

There are numerous social media accounts, vlogs and blogs advocating vegan diets and other dietary restrictions in eating disorder recovery – which may prove to be inspirational to some people. However, the intense focus of these social media accounts may also not be entirely healthy. Many young people are photographing what they are eating and posting about this on-line. Some eating disorder professionals may argue that this is not completely normal either as these behaviours are often seen in patients who are entrenched in an eating disorder. It is useful for clinicians to explore the role of social media with their patients to assess if it is helpful in the recovery or reinforcing restrictive dietary behaviours. Indeed, research suggests that there is a link between high levels of social media use and anxiety and depression.

Legal considerations protecting veganism:

Human Rights Law

The European Convention on Human Rights Article 9 gives the right of “Freedom of Thought, Conscience and Religion” specifically: Freedom to manifest one’s religion or beliefs shall be subject only to such limitations as are prescribed by law and are necessary in a democratic society in the interests of public safety, for the protection of public order, health, or morals, or for the protection of the rights and freedoms of others (49).

The key point to emphasise here is the daily behaviours that accompany your belief, which for vegans means not consuming anything of animal origin, using animal products or products tested on animals.

The European Convention on Human Rights was given effect in the UK in 2000 as part of The Human Rights Act 1998. Article 6 of The Human Rights Act states that it is unlawful for a public authority to act in a way which is incompatible with a Convention right.

Veganism and UK Equality Law

Veganism is belief that has been confirmed to be within the protected characteristics of ‘religion or belief’ under The Equality Act 2010 in England, Wales, and Scotland (51). The Act outlaws direct and indirect discrimination, victimisation, and harassment (52).

The Vegan Society advises that in practice a vegan should be treated in the same way as you would treat a person with a specific religion, such as a Muslim, Christian or Jew. Direct discrimination is treating someone differently because they have a protected characteristic.

Whereas indirect discrimination is when an apparently neutral procedure, provision or policy has the effect of disadvantaging people who share a characteristic i.e., policies and procedures within units or Trusts that apply to eating disorder patients must not impose unevaluated restrictions or prohibitions on dietary practices related to protected beliefs but allow flexibility as required to prevent inadvertent discrimination.

Children and Young People

Both the Equality Act 2010 and the Human Rights Act 1998 are applicable to children and young people. Additionally, the UN Convention on the Rights of The Child 1989 (52), which came into force in 1990, covers the rights of persons under 18, this underlines the right of children and young people to be able to practice their religion or belief. There is also provision to support the: 'rights and duties of the parents and, when applicable, legal guardians, to provide direction to the child in the exercise of his or her right in a manner consistent with the evolving capacities of the child.'

The above information is stated in detail on the Vegan Society’s web page (53).

Note: The International Vegan Rights Alliance (IVRA) no longer exists.

Summary:

Healthcare professionals working in eating disorders acknowledge that there is an increased incidence of patients adopting a vegan diet as part of the development of their eating disorder. It is important to note that adopting a vegan diet and lifestyle does not cause eating disorders. Nor has following a vegan diet proven to be health promoting above current healthy eating guidelines.

However, full consideration and assessment is required on a case-by-case basis by clinical teams. If adopting a vegan diet is believed to be part of the illness clinicians should challenge this as early as possible during their treatment for the eating disorder. If a vegan diet is being followed this should be carefully monitored by the treating team's specialist dietitian. Each treating team should agree on a unified approach within their team to prevent splitting amongst the professionals who may offer conflicting advice.

References:

1. The Royal College of Psychiatrists and The British Dietetic Association. Consensus statement on considerations for treating vegan patients with eating disorders London: The Royal College of Psychiatrists; 2019.
2. Feiel S, Dangour AD, Garnett T, K.Lock , Chalabi Z, Roberts I, et al. Public health benefits of strategies to reduce greenhouse-gas emissions: food and agriculture. The Lancet. 2009; 374: p. 2016-2025.
3. Westhoek H, Lesschen JP, Rood T, Wagner S, DeMarco A, Murphy-Bokern D, et al. Food choices, health and environment: Effects of cutting Europe's meat and dairy intake. Global Environmental Change. 2014; 26: p. 196-205.
4. Austgulen MH, Skuland SE, Schjoll A, Aldnes F. Consumer Readiness to Reduce Meat Consumption for the Purpose of Environmental Sustainability: Insights from Norway. Sustainability. 2018; 10(9): p. 3058.
5. Sabate J, Soret S. Sustainability of plant-based diets: Back to the future. American Journal of Clinical Nutrition. 2014; 100(suppl_1): p. 476S-482S.
6. Hoffman SR, Stallings AF, Bessinger RC, Brooks GT. Differences between health and ethical vegetarians. Stength of conviction, nutrition knwledge, dietary restriction, and duration of adherance. Appetite. 2013; 65: p. 139-144.
7. Dinu M, Abbate R, Gensini GF, Casini A, Sofi F. Vegetarian, vegan diets and multiple health outcomes: A systematic review with meta-analysis of observational studies. Critical Reviews in Food Science and Nutrition. 2017; 57(17): p. 3640-3649.
8. Federal Commission for Nutrition (FCN). Vegan diets: review of nutritional benedits and risks. Expert report of the FCN. 2018;: p. 1-83.
9. Barnard N, Levin S, Yokoyama Y. A systematic review and meta-analysis of changes in body weight in clinical trials of vegatarian diets. Journal of the Academy of Nutrition and Dietetics. 2015; 15(6): p. 954-969.
10. Turner-McGrievy G, Wilcox S, Frongillo E, Murphy A, Hutto B, WIlliams K, et al. The Nutritious Eating with Soul (NEW Soul) Study: Study design and methods of a two-year randomized trial comparing culturally adapted soul food vegan vs. omnivorous diets among African American adults at risk for heart disease. Contemporary Clinical Trials. 2020; 8: p. 105897.
11. Lea E, Crawford D, Worsley A. Public views of the benefits and barriers to the consumption of a plant-based diet. European Journal of Clinical Nutrition. 2006; 60: p. 828.
12. The Vegan Society. Find out how many vegans are in Great Britain. [Online].; 2016 [cited 2019 July 2nd. Available from: https://www.vegansociety.com/whats-new/news/find-out-how-many-vegans-are-great-britain.
13. Ogden J. Religious constraints on prescribing medication. Prescriber. 2016 December;: p. 47-51.
14. German Nutirtion Society. Vegan Diet. Position of the German Nutrition Society (DGE). German Nutirtion Society; 2016.
15. Rayman MP. Food-chain selenium and human health: emphasis on intake. British Journal of Nutrition. 2008 August; 100(2): p. 254-268.
16. Patel N, Milward M. The Oral Implications of Mental Health Disorders Part 1: Eating Disorders. Dental Update. 2019 January; 46(1): p. 49-52.
17. Public Health England. Delivering better oral health: anevidence-based toolkit for prevention. London:, Department of Health; 2017.
18. Hurry JBJ. The impact of a vegan diet on oral health. BDJ Team. 2020 July; 7: p. 18-19.

19. Smiths K, Listl S, Jevdjevic M. Vegetarian diet and its possible influences on dental health: A systematic literature review. Community Dental Oral Epidemiology. 2020 Feb; 48(1).
20. Loyn JRT, Hunter L, Sadaghiani L, Gilmour A. The erosive potential of some flavoured waters. European Journal of Dentistry. 2007 January; 1(1): p. 5-9.
21. Lussi A, Jaeggi T. Erosion -- diagnosis and risk factors. Clinical Oral Investigations. 2008 January; 12(Suppl 1): p. S5-13.
22. Levine R, Stillman-Lowe C. The Scientific Basis of Oral Health Education. 8th ed.: Springer Nature; 2019.
23. Ashcroft A, Milosevic A. The Eating Disorders: 2. Behavioural and Dental Management. Dental Update. 2008 January; 34(10).
24. Public Health England. The Eatwell Guide - How does it differ to the eatwell plate and why? London:; 2016.
25. Russell H. Introducing the Vegan Eatwell Guide. [Online].; 2020 [cited 2020 July 17th. Available from: https://www.bda.uk.com/resource/introducing-the-vegan-eatwell-guide.html.
26. Hart S., Marnane C., McMaster C., Thomas A., 2018: Development of the 'Recovery from eating disorders for life'' Food Guide (REAL food guide) – a food pyramid for adults with an eating disorder. Journal of Eating Disorders 6;6
27. BEAT. Statistics for Journalists. [Online].; 2019 [cited 2020 July 24th. Available from: https://www.beateatingdisorders.org.uk/media-centre/eating-disorder-statistics.
28. Zuromski KL, Witte TK, Smith AR, Goodwin N, Bodell LP, Bartlett M, et al. Increased prevalence of vegetarianism among women with eating pathology. Eating Behaviours. 2015; 19: p. 24-27.
29. Bardone-Cone AM, Fitzsimmons-Craft EE, Harney MB, Maldonado CR, Lawson MA, Smith R, et al. The interrelationship between vegetarianism and eating disorders among females. Journal of the Academy of Nutrition and Dietetics. 2012; 112(8): p. 1247-1252.
30. Trautmann J, Rau SI, WIlson MA, Walters C. Vegetarian students in their first year of college: Are they at risk of restrictive or disordered eating behaviours? College Student Journal. 2008; 42(4): p. 340-347.
31. Bas M, Karabudak E, Kiziltan G. Vegetarianism and eating disorders: association between eating attitudes and other psychological factors among Turkish adolescents. Appetite. 2005; 44(3): p. 309-315.
32. Gilbody S, Kirk S, Hill A. Vegetarianism in young women: Another means of weight control? International Journal of Eating Disorders. 1999; 26(1): p. 87-90.
33. O'Connor M, Touyoz S, Dunn S, Beaumont P. Vegetarianism in Anorexia Nervosa? A review of 116 consecutive cases. The Medical Journal of Australia. 1987; 147(11-12): p. 540-542.
34. Hadigan CM, Amderson EJ, Miller KK, Hubbard JL, Herzog DB, Klibanski A, et al. Assessment of macronutrient and micronutrient intake in women with anorexia nervosa. International Journal of Eating Disorders. 2000; 26(3): p. 284-292.
35. Dunn TM, Bratman S. On orthorexia nervosa: A review of the literature and proposed diagnostic criteria. Eating Behaviours. 2016; 21: p. 11-17.
36. Barthels F, Meyer F, Rietrowsky R. Orthorexic and rstrained eating behaviours in vegans, vegetarians and individuals on a diet. Eating and Weight Disorders. 2018; 23: p. 159-166.

37. Judge M, Wilson MS. A dual-process motivational model of attitudes towards vegetarians and vegans. European Journal of Social Psychology. 2019; 49: p. 169-178.
38. Costa I, Gill PR, Morda R, Ali L. "More than a diet": A qualitative investigation of young vegan Women;s relationship with food. Appetite. 2019; 143: p. 104418.
39. Heiss S, Coffino JA, Hormes JM. Eating and health behaviours in vegans compared to omnivores: Dispelling common myths. Appetite. 2017; 118: p. 129-135.
40. Heiss S, Hormes JM, Timko CA. Vegetarianism and eating disorders. In Vegetarian and plant-based diets in health and disease prevention. Philadelphia: Elsevier; 2017. p. 51-69.
41. National Institute of Health and Care Excellence. Eating disorders: recognition and treatment. London; 2017.
42. Lin L, Sidani J, Shensa A, Radovic A, Miller E, Colditz J, et al. Association between social media use and depression among US young adults. Depression and anxiety. 2016; 33(4): p. 323-331.
43. Tatham C, Patel K. Suitability of common drugs for patients who avoid animal products. The BMJ. 2014 February; 348.
44. Abbott. FAQ. [Online].; 2020 [cited 2020 July 24th. Available from: https://nutrition.abbott/uk/faq.
45. Nutricia. Allergens and cultural diet information. 2020..
46. Fresenius-kabi. Allergen table. [Online].; 2019 [cited 2020 July 24th. Available from: https://www.fresenius-kabi.com/gb/documents/Allergen_Table_March_2019.pdf.
47. Forceval. Forceval. [Online].; 2020 [cited 2020 July 24th. Available from: https://forceval.co.uk/faq/.
48. HUEL. The Huel Powder Formula Explained. [Online].; 2020 [cited 2020 July 24th. Available from: https://uk.huel.com/.
49. European Court of Human Rights. European Convention of Human Rights Strasbury: European Court of Human Rights; 1950.
50. The Vegan Society. The Vegan Society. [Online].; 2020 [cited 2020 August 13th. Available from: https://www.vegansociety.com/whats-new/news/written-judgement-concluding-veganism-protected-belief.
51. Legislation.gov.uk. www.legislation.gov.uk. [Online].; 2010. Available from: http://www.legislation.gov.uk/ukpga/2010/15/contents.
52. United Nations. Convention on the Rights of the Child. United Nations, Office of the high commission; 1989.
53. The Vegan Society. What rights do vegans have. [Online].; 2020 [cited 2020 July 24th. Available from: https://www.vegansociety.com/get-involved/international-rights-network/what-rights-do-vegans-have.
54. The Dietitians of Canada PEN Nutrition. PEN Nutrition [online], 2017 [cited 2019 July 27th. Available from: https://www.pennutrition.com/docviewer.aspx?id=12811

Appendix 1:

How can you tell if a food is suitable for someone on a vegan diet?

Many families will struggle to know if a food is suitable for their loved one following a vegan diet and this can lead to only obvious foods being offered e.g., fruit, vegetables, nuts, and seeds which may not be sufficient to meet an individual's nutritional requirements especially when recovering from an eating disorder. The following is a list of ingredients that indicate that something is not suitable and will enable families to identify more suitable foods for their loved one:

- **Albumen/albumin** – from egg
- **Aspic** – from meat or fish
- **Casein** – from milk
- **Cod liver oil** – from fish
- **Collagen** – from cows, chickens, pigs, and fish
- **Elastin** – from cows
- **Lactose** – from cow's milk
- **Gelatine/gelatin** – from cows or pigs
- **Honey – from bees**
- **Isinglass** – from fish
- **Keratin** – from cows, chickens, pigs, and fish
- **Lard/tallow** – animal fat
- **Pepsin** – from pigs
- **Propolis** – from bees
- **Royal Jelly** – from bees
- **Shellac** – from insects
- **Vitamin D3** – from lanolin or animal fat
- **Whey** – from cow's milk

Under UK law, manufacturers must declare if a product is made in a factory where allergens are present. You may be confused when you see a label that appears to be free from any non-vegan ingredient and then states 'may contain' - **This does not mean the product is not vegan.**

E-Numbers:

The following E numbers almost always come from animal sources.

- **E120:** Carmine
- **E441:** Gelatine
- **E542:** Bone phosphate
- **E901:** Beeswax
- **E904:** Shellac
- **E910, E920, E921:** L-cysteine
- **E913:** Lanolin
- **E966:** Lactitol

If a product does not carry the vegan trademark and it's difficult to work out if it's suitable for vegans, you can contact the manufacturer for information and clarification.

Appendix 2:

Vegan dietary fat challenges.

In order to help a patient and team decide if someone is following a vegan diet for the appropriate reasons or as part of disordered eating, sometimes a fat challenge can be used. Below is an example of this that can be adapted for your own clinical use:

Dietary Fat choice	**Difficulty Rating (1-10)** **1 = easy** **10 = hard**	**Number of times had this week**	**Feelings and behaviours**
Tablespoon of olive/coconut/sunflower oil in cooking			
Tablespoon of nut butter			
½ avocado in salad or sandwich			
Handful of nuts			
Nutty Cereal bar – be natural, 9 bar, trek bar etc			
Cocoa powder			
1 tablespoon of chia seeds			
Vegan cheese (matchbox size)			
1 tablespoon of flax seeds			
Vegan dips and mayonnaise			
Chocolate bar (standard size)			
Sundried tomatoes in oil			
Tahini			
Whole fat plant-based milk (>150ml)			
Packet of crisps			
Individual portion of cake/muffin/pastry			

Appendix 3:

High calorie vegan meal plan:

This is a 2,100-calorie vegan meal plan, with additional snacks can be up to 3,000kcal/day

If more than 3,000kcal/day is needed for weight restoration then a full MDT discussion should happen regarding identification of compensatory behaviors.

This meal plan can be adapted to your service needs:

Breakfast 500kcal

- Breakfast cereal: 3 wheat biscuits / 45g Jordans country crisp / 55g porridge oats (200) with 150ml Alpro Junior soya milk* (100), 35g dried fruit / medium banana (100) and 200ml fruit juice (100)
- 1 medium slice Burgen Soya & Linseed with added calcium (130) with 30g peanut butter (180), medium banana (100) and 200ml Fruit juice (100)
- 2 slices medium sliced Burgen Soya & Linseed bread with added calcium (250), with 1 heaped tsp vitalite on each slice (100) and 200g baked beans (160)
- Breakfast smoothie: 200ml Alpro Junior soya milk* (130), medium banana (100), 20g peanut butter (120), 30g oats (100), a tablespoon of chia sees/linseed (60)

Lunch 700kcal

500kcal main:

- Tortilla (180) filled with 4 tablespoons houmous (110), 40g sweetcorn (50), ½ an avocado (150) and salad to garnish
- ½ baguette (par-baked) (220), 2 falafels (130), 30g vegan mayonnaise (130), cherry tomatoes and salad to garnish
- ½ pot (300ml) of tomato and lentil soup (180), 2 slices of Burgen Soya & Linseed bread with added calcium (250) with ½ avocado (150)
- Pack of couscous (200), ½ tin of bean salad (120), 80g sweetcorn, 2 tablespoons (30g) of cashew nuts (120) and salad to garnish

100kcal pudding:

- 125g alpro chocolate / vanilla / caramel soya dessert
- 125g alpro peach and strawberry yoghurt
- 50g coyo coconut yoghurt

100kcal of fruit:

- medium banana
- 35g dried fruit
- 3 ½ pineapple rings

Evening meal 800kcal

Wherever possible, the following oils should be used:
In cooking:

- Vegetable oil (rapeseed oil) (1 tablespoon 15g = 135kcal)
- Vegetable oils (namely canola, soybean and rapeseed oils) are an excellent source of omega-3 as well as vitamin E & K).

Added to foods or in dressings:

- Linseed (flaxseed) or hemp oil.
- These are not recommended for use in cooking due to the high omega-3 fat content they become unstable on heating

500kcal main:

- Veggie burger (240), seeded roll (180), 15g vegan mayonnaise (80)
- Jacket potato (200), 4 teaspoons of vegan spread (100), soya chilli (1/2 tin tomatoes, ¼ pack soya mince and chilli powder) (100), 30g vegan grated cheese (100)
- ½ packet (80g) of marinated Tofu (190), ½ packet (150g) ready to stir fry rice noodles (160), 20g of cashew nuts (120) 80g stir fry vegetables from frozen (30)
- Curry (100ml coconut milk (150), 1/8th jar of curry paste (95), 100g chickpeas (75), sliced peppers/onion) with a single serve pouch (125g) of wholegrain rice (200)

200kcal pudding

- 38g Cadbury's Bournville Chocolate / Fry's chocolate cream / 10 pieces of Green & Blacks dark chocolate / 12 pieces Green & Blacks ginger and dark chocolate
- Mr Kipling apple and blackcurrant individual pie (pack of 6) / 1/8th (50g) Mr Kipling treacle tart (402g / pie)
- 4 Oreo cookies / 3 Bourbon biscuits / 4 McVities Ginger Nuts
- 30g vegan cheese and 7 Ritz Crackers / 3 Jacobs cream crackers
- 2 scoops soya based ice cream / 125g fortified soya custard and ½ tin of fruit

100kcal drink:

- 200ml fruit juice / smoothie (100)
- 150ml Alpro soya junior* (100)

300kcal snacks – choose up to 3 of the below (depending on the calories required):

- 250ml Alpro Junior Soya milk* (160) & 2 x Tesco Everyday Value Digestive biscuits / Tesco Bourbon Cream biscuits (150)
- Eat Natural Bar Maple Syrup Pecan and Peanut 45g (240) and a portion of fruit (50)
- 125g pot of Coyo Yoghurt (coconut milk raw chocolate) (250) and a portion of fruit (50)
- 50g cashew nuts / 50g almonds / 50g roasted peanuts
- 1 medium slice Burgen Soya & Linseed bread fortified with calcium (120) and 30g peanut butter (180)
- Breakfast cereals as above and 150ml Alpro Junior soya milk*

A vegan vitamin and mineral supplements are advised to ensure nutritional adequacy of the above diet.

* other fortified soya milks require much larger volumes and would not be appropriate when on a refeeding meal plan – there are no other brand alternatives on the market in the UK. Also, it should be noted that this is the few iodine-fortified plant milk on the market

Note: some of the above products do not list any non-vegan ingredients but may be made in a factory that handles ingredients that are non-vegan (therefore there is a small possibility of unintentional animal allergen contamination). However, The Vegan Society's position is that they could still be labelled as vegan.

This meal plan was devised by:

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- Heather Russell – Dietitian from The Vegan Society
- Sarah Fuller – Advanced Specialist Dietitian for Bedfordshire and Luton's CAMH Eating Disorder Team, East London NHS Foundation Trust

Appendix 4:

Table 4 – Comparing cow's milk alternatives appropriate for a vegan diet and key nutritional information:

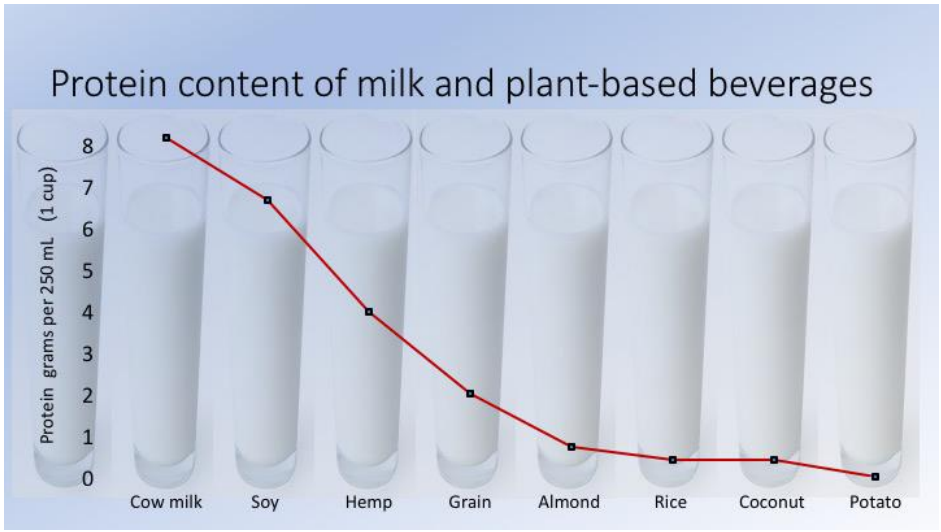
Milk alternative	Kcal/100ml	Protein g /100ml	Calcium mg /100ml
Almond milk (sweetened)	22	0.4	120
Almond milk (unsweetened) *	13	0.4 – 0.5	120
Coconut milk *	20 - 27	0.1- 0.2	120
Hazelnut milk	27	0.4	120
Hemp milk	35	0.6	0
Hemp milk (unsweetened)	27	0.6	0
Oat milk *	42 - 57	0.7 - 1	120
Rice milk *	47 - 50	0.1	120
Soya milk (sweetened) *	39 - 42	3 - 3.4	120
Soya milk (unsweetened) *	33 - 34	3.3 – 3.4	120
Soya milk (growing up)	64	2.5	120

* Nutritional information depends on specific products

Table 5 – Cow's milk key nutritional information:

Milk alternative	Kcal/100ml	Protein g /100ml	Calcium mg/100ml
Whole milk	64	3.2	120
Semi-skimmed milk	50	3.6	120
Skimmed milk	35	3.4	125

Infographic comparing the protein contents of plant-based milk alternatives:



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