Eating Disorders in Primary Care

National Eating Disorders Collaboration

Nutrition Myths

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Hidden truths: Dispelling nutrition myths in an over-informed world

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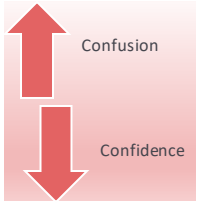
Definition of confusion (Oxford)

1. Uncertainty about what is happening, intended, or required.
   i. A situation of panic or disorder.
   ii. A disorderly jumble.
2. The state of being bewildered or unclear in one's mind about something.
   i. The mistaking of one person or thing for another.

Consumer confusion



- IFIC 2012:
  - 3 out of 4 consumers feel that changes in nutritional guidance makes it hard to know what to believe
  - Half believe it is easier to do their own taxes than to figure out how to eat healthfully

(International Food Information Council Foundation 2012 Food & Health Survey, Consumer Attitudes Toward Food Safety, Nutrition & Health)

Nutrition public health messages

- *"Well, they seem to change their mind all the time… First it's all about not eating fat, then they tell you some fats are ok, others are not. Ok, so then you have to try and figure out which fats are good, which are bad, and how much fat you can eat! Then it's sugar. So now you have to look at how much sugar the food has. Then it's fibre, so it's time to start seeing how much fibre food has… So does that mean you have to look at fat, sugar, and fibre together?"*

(Cornish & Moraes, 2015)

What do ED clinicians know?

- 65 clinicians in UK (dietitians, nurses, clinical psychologists, psychiatrists) working with EDs and a group of 23 non-clinicians (lay group)
- Completed a standardised measure of knowledge of nutritional content of foods
- Dietitians had the highest level of knowledge regarding carbohydrate, protein & fat
- Psychiatrists were next best informed
- **Clinical psychologists and nurses were no better than the lay group**
- **Links between nutrition knowledge level and dinician's own eating attitudes**

(Cordery & Waller, 2006)

- 111 health professionals in Australia working with EDs, 34 individuals with an ED and 116 controls
- Completed General Nutrition Knowledge Questionnaire
- **Non-dietitian health professionals had similar knowledge levels to individuals with EDs**

(Long, Soh, Walter & Touyz, 2011)

Debunking Myths

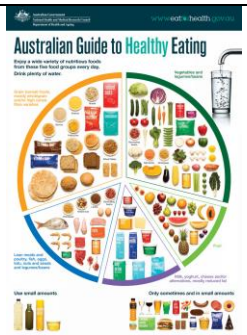
- A nutrition myth may have circulated for years, passed from person to person. To displace a myth, you have to create a credible replacement.
- Think about all of the influences on your own food beliefs
- We create our own **patterns** of eating influenced by our family/peers/ environment etc.
- In an ED these become **food rules** which are driven by emotions and negative reinforcement

Question: What is 'normal healthy' eating?

What does a 'normal healthy' eater look like?

Engages in dietary restraint	**OR**	Has a balanced diet
Monitors caloric intake		Has lots of dietary variety
Avoids high fat food		Listens to and trusts body
Has fairly low carbohydrate intake		Eats when hungry, stops when full
Has minimal salt intake		Eats what is wanted, when it is wanted
Drinks at least 2L water per day		Respectful of taste preferences
Has high protein intake		
Takes a daily multivitamin		

Advertising & media messages



So is this what we should all be following?

Myth 1: You need to follow the AGHE

- It was developed to be broadly used at a population level, not for individuals
- It cannot account for an individual's nutritional needs
  - E.g. whether they have diabetes, coeliac disease, cystic fibrosis, etc.
- And yet, everyone thinks this is what they are meant to be following!
- So, consider how patients with eating disorders might interpret it . . .
- It certainly does not target their health concerns and needs
  - i.e. malnutrition, poor bone health, food anxiety

McMaster & Hart, 2018

Myth 2: You don't need carbs at every meal

Carbohydrate is the essential macronutrient we use as fuel

- Keeps metabolic processes in a well-nourished, not starved state
- Brain relies on glucose as the sole fuel source
- It keeps you feeling satisfied and nourished, rather than deprived
- It is also the essential fuel for all 'work' done in the body
  - Muscle repair
  - Cell building
  - Metabolic processes, etc.
- Carbohydrates provide our main source of fibre
  - Missing them at one meal can make a big impact on bowel health

Myth 3: Some carbs are better than others

We all know added sugar is bad, fructose is terrible and we should be aiming for low glycaemic index foods, right??

- Sweet potato is better than white potato
- Added white sugar is bad
- Avoid/limit those of perceived lower value

- It is often believed we should avoid those of perceived lower value

Carbohydrates are all carbohydrates!

Myth 3: Some carbs are better than others (cont.)

"High fructose is bad"

- Although there is some evidence that excessive fructose can contribute to metabolic complications (insulin resistance, fatty liver, etc), too much of anything can be harmful
- More RCTs are needed

"High glycaemic index foods are bad"

- The quantity of carbohydrate always has a bigger effect on blood glucose than the quality
- Primarily a concern for those with insulin resistance or Type 2 diabetes
- Really it's the glycaemic load that is important
  - Glycaemic load = GI x carbohydrate (g) content per portion ÷100
  - Or the total glycaemic load of a mixed meal

Myth 4: A high protein diet is healthier

The jury is out on high protein diets

- Although protein stimulates satiety hormones (e.g. CCK, PYY), fat does even more!
- Some initial evidence that high protein diets in combination with high intensity resistance training may increase lean muscle mass in athletes
  - But may be at the expense of other macronutrient benefits
- In fact high protein, low carbohydrate diets have been linked to increased mortality rates (Lagiou 2007 J Internal Med.)

Myth 5: A plant-based diet is healthier than an animal-based diet

Plant-based diets may have a detrimental effect on diet quality

- Every individual has their own health concerns and needs
- In clinical practice, people often struggle to maintain iron levels on a vegetarian diet
- Nutritional balance is also often poor, with inadequate consumption of protein, iron, B12, zinc, Mg, omega-3 (Turner et al, 2014, J Nutr Health Sci)
- Vegetarians consume inadequate iron, B12, protein and zinc (NHANES study, Farmer, 2014, AJCN)

Sobiecki et al (2016) Nutrition Research

- Prospective study of 30, 251 participants
- Vegans had lowest energy intakes of all diets
- High prevalence of B12 and iodine inadequacy in vegans

Myth 5: A plant-based diet is healthier than an animal-based diet

Demmer, Cifelli et al (2017) Public Health Nutrition

- Diet modelling from NHANES Study - girls 12-19 yo
- Increasing plant-based food consumption by 100% increased fibre,, sugar, vitamin E, Fe and folate, but decreased total fat, Zn, Vit D, Ca and protein
- Increasing protein-rich plant foods by 100% made little difference, as inadequately consumed
- Increasing dairy foods by 100% increased Vit D, Mg, Zn, Ca, K, energy, sat fat and protein

McEvoy et al (2012) Public Health Nutrition

- Both vegetarian and diets including small amounts of red meat have been associated with reduced risk of heart disease and T2DM.
- There is limited evidence that a vegetarian diet prevents cancer

Myth 6: Gluten could be the cause of your gut issues

In patients with EDs, it is more likely malnutrition and anxiety that are associated with gut issues

- Gluten is a problem for ~0.5-1% of the population (e.g. those with coeliac disease)

Biesiekierski et al (2013) Gastroenterology

- Often gluten is to blame when malabsorption of fermentable sugars (ie. FODMAPs) is the cause of the gut issues

Zong et al (2017) Circulation

- Moreover, gluten consumption has been linked to lower risk of Type 2 DM

Benini et al (2004); Perez et al (2013); Heruc et al (2018)

- Increased prevalence of GI symptoms in AN improves with refeeding

Myth 7: Some foods are *good*, some foods are *bad*

- Foods are not intrinsically 'good' or 'bad'
  - These are values formed from media messages, family habits and personal beliefs
- No food is good or bad for everyone
  - Everyone has different nutritional needs, e.g.
    - *A person with cystic fibrosis needs lots of salt*
    - *A person with diabetes needs carbohydrate regularly*
    - *A person with inflammatory bowel disease might need a low fibre diet at times, and a high fibre diet at other times*
    - *A person with haemochromatosis might need reduced red meat consumption*
    - *A person with iron deficiency anaemia might need more red meat consumption*

Myth 8: Fun foods are not everyday foods

Chocolate	Pizza
Soft Drink	Takeaway food
Potato/Corn Chips	Hamburger
Lollies	Ice cream
Cake	Dessert
Pastry/Baked Goods	Hot chips
Biscuits	Mints

Myth 9: Full fat dairy is bad for you

"Full fat dairy increases the risk of heart disease!"

Full fat dairy does not increase the risk of heart disease

Guo, Astrup et al (2017) European Journal of Epidemiology

- Meta-analysis combining data from 29 prospective cohort studies
- High fat dairy intake was not associated with risk of all-cause mortality, coronary heart disease or cardiovascular disease
- Dairy (whether high fat or low fat) has a neutral effect on cardiovascular risk

Myth 9: Full fat dairy is bad for you (cont.)

"It could be contributing to your high mucous production"

Cow's milk does not lead to mucous production or asthma

Wuthrich, Schmid et al (2005) J. of the American College of Nutrition

- Perceived changes in mucous production in both cow's milk *AND* soy milk
- Not increased in those with a common cold virus
- Milk consumption does not exacerbate asthma symptoms

Myth 9: Full fat dairy is bad for you (cont.)

"The fat is upsetting your stomach"

It is more likely that a patient's stomach is upset due to malnutrition and impaired gut function

Perez, Coley et al (2013) J. Pediatrics

- 16 females with AN & 22 healthy controls, patients studied again after 3-4 months
- Adolescents with AN have impaired gastric accommodation, more somatic complaints and more FGIDs
- After nutritional rehabilitation, all improved

Heruc, Little et al (2018, unpublished)

- 22 females with AN & 17 healthy controls, patients studied at Wk0 & Wk2
- Slower gastric emptying & more GI symptoms in starved patients at Wk0 than controls
- After 2 weeks of refeeding, gastric emptying improved, but GI symptoms did not

Myth 9: Full fat dairy is bad for you (cont.)

"You can still gain weight without it"

It is very difficult for underweight patients to meet their nutrition requirements for weight gain without full fat dairy

Clinical practice and food modelling, Hart & McMaster (2018)

- It is almost impossible to achieve 30% energy intake from fat if drinking low fat milk.
- Patients prefer full strength rather than a larger serve of low fat milk

Myth 10: Calcium tablets & oral contraceptives will improve bone density

Mehler, Cleary & Gaudiani (2011) Eat Dis.

- Research indicates that calcium supplementation does little to restore bone density or prevent further deterioration
- Other treatments have marked disadvantages
- Bone density is best (partly) restored & protected by returning to a healthy weight where normal sex hormone profiles and normal fertility function are resumed

Robinson et al (2017) Curr Opin Peadiatr.

Oral hormone replacement may prevent further deterioration, but does not reliably restore bone density

- May also mask resumption of menses

- There is some initial evidence of benefit from transdermal estrogen and bisphosphonates (with caution in young women)

Myth 11: You should have 8 cups of water a day

Drink when you're thirsty, drink more when you sweat more – your body will take care of itself

- Everything you eat contains some water, and raw fruit and veg have a lot
  - Diet can account for 20% of fluid intake
- Non-alcoholic drinks (tea, milk, juice, etc) mostly contain water and contribute to hydration
- Caffeinated drinks does not dehydrate, and also contributes to fluid intake
- But there is no firm science to support any recommendation
- Fluid needs depend on age, weight, physical activity, health and climate
- The best guidance comes from within – the body feels thirsty with declining hydration
  - Urine can also be a guide: dark yellow indicates dehydration, well-hydrated is pale yellow

Myth 12: The child is just a picky eater, they'll grow out of it

Not growing out of picky eating can be a serious problem, and ~8% don't

Mascola et al (2010) Eat. Behav

- ~20% of 11-year-old children have selective eating
- ~60% 'grow out of it' within 2 years
- Those who don't (~8 in 100):
  - Are less willing to try new foods
  - Have stronger food preferences
  - Have more family conflict around food selections

Mammel & Ornstein (2017) Curr. Opin. Pediatrics

- Early prevalence and epidemiological studies suggest 9-27% of ED patients may actually have ARFID
- Concerns about eating behaviours at any age, with or without weight loss, should be taken seriously, with close monitoring to optimise early intervention

Case study

- Heidi was a small baby, but health professionals did not express concern
- Peanut allergy diagnosed at 2yo
- Became increasingly selective with eating, and avoided many foods
- Struggled to put on weight, and by 10yo was shorter than most of her peers
  - Health professionals still did not express concern to the parents
- Fussy eating continued, and parents would cook an entirely different meal for her at dinner from what the rest of the family was having
- By 16yo, she still had not had a period, and had not grown taller since she was 11yo.
- Heidi was becoming increasingly anxious and avoidant of social activities with friends due to food anxieties

Myth 13: They will eat when they are ready, let's focus on the underlying factors

	Dietary Pattern	Nutritional consequence	Maintaining impact on ED
ED with significant weight loss or significantly underweight: AN, AAN	• Restricted food intake • Restricted macro & micronutrients	• PEmalnutrition • Fe Deficiency • B12 Deficiency • Inadequate Ca++	• Starvation syndrome • Medical instability • Cognitive impairment • Reduced bone density
ED with dysregulation of eating behaviour	• Irregular food intake & variable quantities • Restricted micronutrients? • Distorted macronutrient profile? • Excess energy intake?	• ? Ca, Fe, B12 Deficiency • ? Excess hi GI CHOs • Saturated fat intake	• Dysregulation of appetite / eating behaviour

Myth 14: If a child is overweight, start them on a diet

- For most children & adolescents, weight maintenance is the goal rather than weight loss (NH&MRC 2013)
- Evidence is growing that weight loss & dieting is not the solution to body / weight concerns, particularly those arising from weight teasing / bullying (Neumark-Stzainer)
- Adolescents who diet for weight loss show higher weight & higher rates of eating disorders at 5 years follow-up (Neumark-Stzainer)

Weight management in children & adolescents

- For children and adolescents who are overweight or obese, recommend lifestyle change — including reduced energy intake and sedentary behaviour, increased physical activity and measures to support behavioural change
- Current Australian dietary and physical activity guidelines should be used as the basis of advice on dietary intake, physical activity and sedentary behaviour for children and adolescents.
- Approaches within a family approach have the strongest evidence
- For most children & adolescents the goal is not weight loss, but weight stabilisation
- For post-pubertal adolescents with a BMI > 40 kg/m^2 (or > 35 kg/m^2 with obesity-related complications), laparoscopic adjustable gastric banding via specialist bariatric/paediatric teams may be considered if other interventions have been unsuccessful in producing weight loss.

(NH&MRC. Clinical Practice Guidelines for the management of obesity in adults adolescents & children in Australia 2013)

Weight management in children & adolescents

Advice to support healthy eating in children

- Take a family approach to improving nutrition and be a good role model
- Ensure children have regular meals, including breakfast and snacks, in a sociable atmosphere
- Whenever possible, eat meals as a family
- Separate eating from other activities such as watching television or using the computer
- Encourage children to listen to internal hunger cues and to eat to appetite
- Have healthy foods readily available
- Avoid being restrictive or controlling of your child's food intake
- Explain the concept of foods that are appropriate 'often' or 'sometimes'
- Avoid using foods as treats or rewards
- Comfort children with attention, listening and affection instead of food
- Encourage children to develop healthy ways of regulating emotions (i.e. that don't involve food)

(NH&MRC. Clinical Practice Guidelines for the management of obesity in adults adolescents & children in Australia 2013)

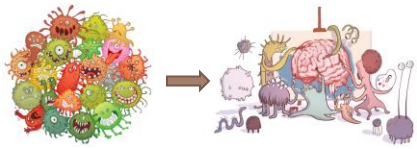
Weight Management in children & Adolescents

Advice to support physical activity and reduce sedentary behaviour in children

- Explain that being active is good for overall health as well as being fun
- Encourage both moderate and vigorous activities every day
- Be active with children (e.g. playing games with balls, or walking or bike riding together)
- Support children to include physical activity in daily activities (e.g. walking to school, household tasks)
- Encourage children to be involved in team sports
- Reduce inactive leisure time (e.g. limit screen-based activities)
- Get the family involved in local activities (e.g. sports clubs)
- Make use of local opportunities for physical activity (e.g. swimming pool, walking tracks)
- Be a good role model by being physically active yourself

(NH&MRC. Clinical Practice Guidelines for the management of obesity in adults adolescents & children in Australia 2013)

Myth 15: The microbiome can inform dietary intake



CAN THIS INFLUENCE THIS?

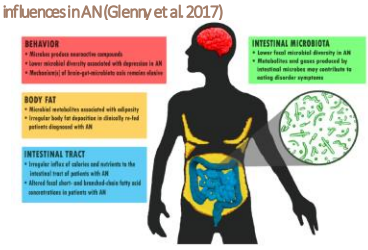
Microbiome basics

- Only investigated in AN so far
- Intestinal microbiota:
  - community of microorganisms, including bacteria, archaea, fungi, parasites, and viruses, that reside within the human GI tract
- Trillions of microbes, equating to a 1:1 ratio of human-to-bacterial cells, with the greatest density and diversity found in the lower GI tract
- Unique to each individual
- Composition influenced by many factors
  - E.g. genetics, diet, health status, age, sex, geographical location, drug exposure

Microbiome research in AN

- Lower microbial diversity in AN pre (n=16) and post (n=10) refeeding compared with healthy controls (Kleiman, Watson et al. 2015)
- Profound microbial perturbations in AN patients (n=55) compared with normal weight controls (n=55) and elevated branched-chain fatty acid concentrations (Mack, Cuntz et al. 2016)
  - Distinct perturbations between AN-R and AN-BP
  - Microbial richness increased with weight gain (n=44), but disturbances in microbiota did not recover

Microbial influences in AN (Glenny et al. 2017)



In reality….

- Correlation is not causation
- Animals are not humans
- Microbial detection is not the same as the microbiome
- More questions than answers

AND of concern:

- Commercialization of human microbiome research
- Probiotic research often mis-reported in the media
  - Only positive results reported in media
  - RCTs use different bacteria strains, therefore difficult to pool results

Myth 16: If the number on the scales goes up, body fat must have increased

If the number on the scales goes up, wait and see!

Many factors may affect weight at any one point in time:

1. Time of day
   - Weight will always be lower in the morning and higher in the afternoon/evening, after more food and fluid have been consumed

Always weigh patients at a similar time of day e.g. after breakfast, before afternoon tea, etc.

2. Menstrual cycle
   - Weight naturally fluctuates throughout the menstrual cycle in women

White, Hitchcock et al (2011) Obstet Gynecol Int.

   - It can be up anywhere from 0 – 7kg (!) higher each month during the end of the luteal phase and during the first few days of menstrual flow due to fluid retention (usually 1-2 kg)

Myth 16: If the number on the scales goes up, weight must have gone up (cont.)

3. Hydration changes
   - If a patient has drunk more or less, this will certainly impact on their weight
   - If a patient has vomited in the last 24 hours, this may lead to either over or under-hydration, depending on their vomiting behaviours and body's response
   - If the patient has been sweating more (whether due to weather or sport), they may be more dehydrated
4. Bowel movement changes
   - If a patient is constipated, their weight may increase
   - Likewise diarrhoea may cause weight to drop with fluid loss
5. Body composition changes
   - If a patient has increased muscle mass, their weight may increase

Myth 17: Patients need to be in the healthy range

People can be healthy above a BMI of 25

1. The BMI Classifications developed by the WHO for 'Normal' (18.5-25) are based on prevalence data and statistics

It does not imply people must be within this range to be 'healthy'

2. 50% of individuals with a BMI 25-30 are metabolically healthy

Tomiyama et al (2016) Int J Obesity

- 40,420 participants from the NHANES study >18yo
- 30% individuals in the obese range were metabolically healthy
- 30% of normal weight individuals were cardiometabolically *unhealthy*

3. Athletes and other people with high muscle mass are often over a BMI of 25 and healthy

Myth 17: Patients need to be in the healthy range

4. We are healthier at higher weights

Afzal et al. (2016) JAMA

- Three large Danish cohorts from 1970s, 1990s and 2000s followed up until death
- BMI of 27 has the lowest risk of dying from any condition
- BMI associated with all-cause mortality increased by 3.3

5. There is considerable weight bias amongst some ED health professionals

Puhl et al. (2014) IJED

- Negative weight stereotypes were present among some professionals treating eating disorders.
- The majority had observed other professionals in their field making negative comments about obese patients
- 42% believed that practitioners who treat eating disorders often have negative stereotypes about obese patients
- 29% reported that their colleagues have negative attitudes toward obese

And finally. . . A word on those *healthy* foods

Spinach and leafy greens contain *minimal* iron

Pumpkin does not contain *enough* carbohydrate

Carrots certainly don't have *enough* carbohydrate

A few strawberries is *not* a serve of fruit

Vegetable juice is *not* the same as fruit juice

***Neither* almond *nor* coconut milk have adequate protein or carbohydrate**

Quinoa does *not* have as much protein as meat

Mushrooms are *not* a source of protein

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