CN complete nutrition

Constipation

Considering fibre and laxatives

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Constipation is a common digestive disorder, which can occur at any age, affecting up to 1 in 7 adults and 1 in 3 children at any one time.[1] Furthermore, chronic constipation is thought to affect up to 14% of the global population,[2] which is equivalent to almost 9 million people in the UK.[1] Women are 2-3 times more likely to experience constipation than men, especially if pregnant, and it is also 5 times more common in older age.[1, 3, 4] In 2018/19, constipation cost the health service £168 million just for non-elective admissions and prescription costs. When elective admissions were factored in, the cost rose to £181 million and surprisingly this figure doesn't include associated costs for GP visits, home visits or over the counter laxatives.[1]

Two well-known known interventions to tackle constipation are adapting fibre intake and laxatives. This article aims to give an overview of the roles that both can play in managing this often preventable and treatable disorder.

Defining constipation

Put simply, constipation is considered to be apparent if a person's passage of stools is less than their normal pattern. The Bristol Stool Chart[5] (**Figure 1**) is a universal tool, used across healthcare settings, to describe stool type and aid identification of bowel issues relating to defecation. Stool types 1 and 2 are considered to be indicative of constipation.

Chronic constipation, as defined by The Rome IV diagnostic criteria,[6] is when a person experiences ≥2 of the following symptoms for a period of 12 weeks within the last 6 months:

- Passing a stool <3 times per week
- Experiencing discomfort when or needing to strain to pass a stool for >¼ of defecations
- Producing hard, lumpy or large and dry stools for >¼ of defecations
- The requirement to use manual manoeuvres to pass a stool
- Sensation of incomplete evacuation in >¼ of defecations
- Sensation of anorectal blockage/obstruction.

Figure 1: Bristol Stool Chart

Type 1		Separate hard lumps, like nuts (hard to pass)
Type 2		Sausage-shaped but lumpy
Type 3		Like a sausage but with cracks on its surface
Type 4		Like a sausage or snake, smooth and soft
Type 5		Soft blobs with clear-cut edges (passed easily)
Type 6		Fluffy pieces with ragged edges, a mushy stool
Type 7		Watery, no solid pieces Entirely Liquid

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First port of call when supporting people with constipation is to consider and discuss lifestyle factors, especially as low fibre intake, poor hydration and insufficient physical activity levels are commonly associated with the presence of constipation.[7] Ignoring the urge to go to the toilet, changing diet/daily routine or experiencing stress, anxiety or depression can also trigger constipation[8] and warrant investigating as a part of a holistic dietetic assessment.

Common reasons for chronic constipation can be related to slow stool transit, opiate use, antihistamines, antidepressants and co-existing medical conditions, such as neurological disorders or diabetes.[1] This may mean regular laxative management is required alongside review of the lifestyle factors mentioned previously.

So, first fibre

Fibre encompasses all carbohydrates that are neither digested or absorbed in the small intestine. These include non-starch polysaccharides, such as cellulose, hemicelluloses and pectins, resistant starch and non-digestible oligosaccharides, such as inulin and oligofructose, as well as lignins.[9, 10] Fibre passes through the gastrointestinal tract into the colon and forms the bulk of the stool after being partially or completely broken down.[11] The average UK person's consumption of fibre is 18 g per day; 12 g less than the recommended target of 30 g per day for those 15 years or older.[12]

The physicochemical characteristics of fibres include fermentability, solubility and viscosity, and these properties influence not only fermentation but also the therapeutic effects of consumption.[13] Given the substantial inter-condition and inter-individual variability in response to dietary fibre, there remains a complex challenge of unravelling which fibres are most appropriate for which gastrointestinal disorders,[14] including constipation. However, a number of large cohort studies have demonstrated positive associations with high intakes of dietary fibre and stool frequency.[15, 16] A systematic review with meta-analysis of 7 randomised control trials (RCTs) found that fibre (dietary, e.g. wheat bran; supplement form, e.g. psyllium; and prebiotics, e.g. inulin) was associated with increased stool frequency and softened stool consistency when compared with placebo.[17]

Fibre can often be discussed in terms of soluble and insoluble. Although scientific organisations argue that these terms are no longer really appropriate, they are commonly used in healthcare[18] and will be discussed as part of this article.

Soluble fibre

Soluble fibre, such as pectins, beta glucans, gums and galactomannan,[14, 18, 19] dissolves in water within the bowel and forms a soft gel-like substance, which draws water into the stool and eases their passage through the bowel. Through this mechanism, it can also aid the reduction of loose stools and diarrhoea.[20] Foods containing soluble fibre (see **Table 1**) are less likely to cause bloating than foods containing insoluble fibre[20] and have a greater impact on improving irritable bowel syndrome related constipation.[21] A systematic review of 6 RCTs found that soluble fibre, when compared to placebo, led to improvements in straining (55.6% *vs.* 28.6%), pain on defecation, stool consistency, an increase in the mean number of stools per week (3.8 stools per week after therapy compared with 2.9 stools per week at baseline), and a reduction in the number of days between stools.[22]

Insoluble fibre

Insoluble fibre, such as cellulose, hemicelluloses and lignins, do not dissolve in water. For many who are constipated, consuming more insoluble fibre (see **Table 1**) and plenty of water is enough to relieve symptoms,[11] as it helps draw water into the stool to soften it, speed up stool transit time through mechanical stimulation in the bowel and increases stool weight, which improves bowel movement consistency.[11, 23] In terms of treatment, insoluble fibre with wheat bran and rye bread improves bowel movement frequency and defecation difficulty significantly.[24, 25]

It is worth remembering that when encouraging patients to increase their fibre intake, it is important that they are mindful of fluid intake too. When dehydrated, it is thought that the body removes water from stools causing them to become hard and dry, with little lubrication to pass a bowel motion. With this in mind, sufficient fluid is considered fundamental for stool consistency and maintaining bowel motility.[26] One randomised crossover study in healthy male volunteers found that a low fluid intake (0.5 L per day) *vs.* standard intake (2.5 L per day) was associated with lower stool weight and frequency but did not report any differences in bowel transit times.[27] It has been found that the effects of a high fibre diet on stool frequency is enhanced with increased water consumption, and reduces laxative consumption in adults and osmotic laxative use in children.[28, 29]

Table 1: Soluble & insoluble fibre food sources[22]

	Food sources
Soluble fibre	• Oats • Fruit (especially with skins or seeds) • Dried fruit • Vegetables • Beans • Peas • Lentil • Barley • Psyllium
Insoluble fibre	• Wholemeal bread/ pitta bread • Rye bread • Wholegrain bread and cereals • Brown bread • Wholemeal pasta • Potatoes with skins • Brown rice • Wheat bran and corn bran • Vegetables (cabbage, carrots, Brussel sprouts) • Legumes • Small seeds (strawberries)

So, where do laxatives come in?

There are many types of laxatives (see **Table 2**) that can be accessed or recommended to treat constipation. One can choose to take a single type of laxative or a combination in order to optimise chances of achieving symptom relief, e.g. a stimulant laxative, such as senna and a stool softening laxative, such as sodium docusate, are a common combination.

Laxative use is often recommended as a treatment option after common lifestyle changes have been trialled. Unfortunately, evidence lacks large, well-controlled, published studies with comparable data regarding the efficacy of laxatives on constipation. Despite this, it isn't uncommon to see people who have struggled with constipation self-medicate with a laxative or two to try and gain symptom relief.

Approximately, 1 in 5 people are too embarrassed to talk about their bowels,[8, 30] and so self-medicating without considering first line advice can increase the likelihood of laxatives being used longer than is advisable. For the majority of cases, laxatives are recommended to be used as a short-term treatment, with a time limit of use of up to one week at a time[29] and stopped once bowel opening has occurred. Excessive doses of laxatives can have adverse side effects (see **Table 2**), including diarrhoea, which, if prolonged, could cause electrolyte disturbances (e.g. hypokalaemia).[1] Long-term laxative use can cause the bowel to become progressively less responsive to all laxative effects, meaning that increasing doses can be required.[30] In certain situations, constipation will require regular laxatives but this is usually medically managed.

Conclusion

As dietitians, checking baseline bowel habits is a fundamental aspect of our practice. Identifying constipation can prompt simple and effective strategies to be discussed, considered and implemented early, often leading to positive effects on patient and clinical outcomes. Be it acute or chronic in presentation, first line considerations and advice for constipation focus on lifestyle factors, particularly adapting and often increasing all fibre intake, optimising physical activity (if possible) and increasing fluid intake with the goal of achieving hydration. These principles of treating and managing constipation are fundamental but should not be discussed without considering laxative use or need in order to gain a whole picture of factors that could be affecting the person's ability to open their bowels.

Table 2: Laxatives commonly used in clinical practice to treat constipation[4, 8, 30]

Laxative name	Laxative type	Mechanism of action	Potential adverse side effects
Ispaghula husk (Fybogel or Ispage)	Bulk forming	Increases faecal mass by retaining water within the stool, increases peristalsis and softens stool. Can take 2-3 days to work.	Flatulence and bloating. Excessive doses or insufficient fluid intake may also cause intestinal obstruction.
Methyl cellulose	Bulk forming		
Sterculia	Bulk forming		
Lactulose (Duphalac or Lactugal)	Osmotic	Increase the amount of water within the large bowel, which enhances bowel distension and stimulates peristalsis. *Lactulose and macrogols also have stool softening properties. Can take 2-3 days to work.	Abdominal cramps or pain, bloating, flatulence, nausea and vomiting. Dehydration (less common) but especially if alongside insufficient fluid intake.
Macrogols (polyethelene glycols, Movicol, Laxido, Molaxole, Molative and CosmoCol)	Osmotic		
Phosphate/ sodium citrate enema	Osmotic		
Senna (Senokot)	Stimulant	Activate peristalsis through stimulating colonic nerves (senna) or colonic and rectal nerves (bisocodyl & sodium picosulfate).	Abdominal cramps, diarrhoea, nausea and vomiting. Senna may cause brownish-yellow discoloration of urine.
Bisocodyl (Duclolax) & sodium picosulfate	Stimulant		
Docusate	Stool softener	Surface-wetting agents that soften the surface of the stool by enabling water to penetrate it. Docusate also has a weak stimulant effect.	
Arachis oil	Stool softener		

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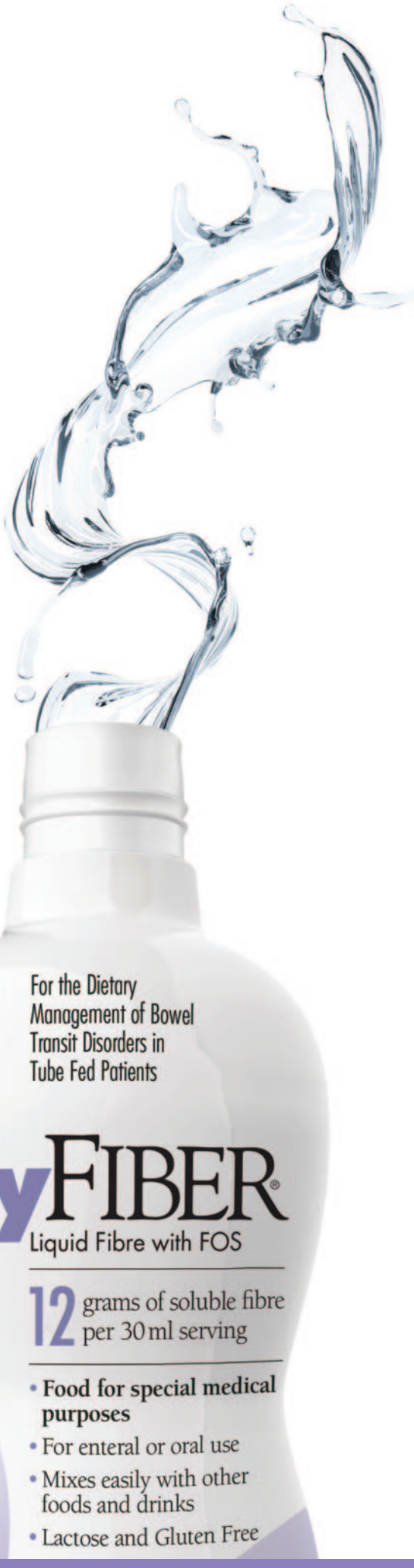

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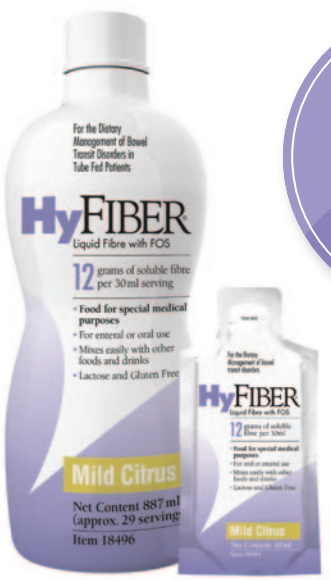

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