

# Using wheat bran fibre to improve bowel habits during pregnancy – a call to action

## Abstract

Constipation and haemorrhoids are two of the most common problems experienced by pregnant women. Clinical guidelines agree that increased fibre (particularly wheat bran) and fluid intakes are advisable to promote bowel health (Jewell and Young, 2001; National Institute for Health and Care Excellence (NICE), 2010) but no specific guidance is given as to how much fibre or fluid should be consumed. This lack of direction leaves midwives relying on a common sense approach to support women in improving their dietary intake. However, do midwives have sufficient nutritional knowledge to empower women with appropriate, healthy, high-fibre choices? A literature search was carried out to identify papers addressing the role of fibre and fluid during pregnancy. Overall, fibre consumption reported by pregnant women fell woefully short of recommended intake. Studies suggest that most pregnant women in the UK would benefit from an increase in fibre intake of at least 10 grams a day in order to help prevent constipation and haemorrhoids. This article provides practical advice to help boost fibre intake in order to improve the quality of life of pregnant women.

information is lacking as to the recommended amount fibre or which foods should be encouraged.

Given the high incidence of these complaints, and the lack of specific advice on fibre during pregnancy, it seemed timely to conduct a review of the available evidence. The objectives of this review were to try to identify:

- How much fibre is recommended for pregnancy and how this compares to current intake
- What the potential complications of a low fibre diet during pregnancy are
- If there is a beneficial role for fibre outside of digestive discomfort
- Which types of fibre can help to prevent or treat bowel disorders during pregnancy, and how much is needed to alleviate these conditions
- If midwives have sufficient knowledge regarding the benefit of fibre to improve bowel health, and what the implications for midwifery practice are

Each year there are more than 800 000 live births in the UK (Office National Statistics, 2012; Northern Ireland Statistics and Research Agency, 2012; General Register Office for Scotland, 2012) and excluding nausea and vomiting, bowel disorders such as constipation and haemorrhoids are among the most common complaints experienced by these pregnant women (Cullen and O'Donoghue, 2007). Around 40 per cent of women (323 000) will experience constipation at some point during their pregnancy, and following birth, almost 20 per cent of women (160 000) continue to be troubled by this uncomfortable condition (Derbyshire et al, 2006).

Haemorrhoids affect between 25–35% of women during pregnancy (Staroselksy et al, 2008), and can be a recurring issue in the 12 months after giving birth.

Clinical guidance is consistent in recommending dietary modification to alleviate constipation and haemorrhoids. The National Institute for Health and Care Excellence (NICE) (2010) recommends that 'women who present with constipation in pregnancy should be offered information regarding diet modification, such as bran or wheat fibre supplementation' (NICE, 2010:21) However, specific

## Methods

An electronic search of the Pubmed and Ovid databases, clinical guidelines and reports examining the role of fibre in pregnancy and pregnancy related bowel disorders was undertaken. Search terms included 'pregnancy', 'fibre or fiber', 'constipation', 'haemorrhoids', 'wheat bran', 'midwifery', 'midwife' and 'nutrition knowledge'. The citations found in the searches were organised by reading the titles and abstracts, and full papers obtained for those that were relevant.

Papers, guidelines and reports published in English between 1950 and 2012 were included. The citations found in the searches were organised by reading the titles and abstracts, and full papers obtained for those that were relevant. Around 450 papers relating to pregnancy, fibre and either constipation or haemorrhoids were identified, and any with no specific reference to fibre in the abstract were excluded. Most intervention trials were discarded as they focused solely on pharmaceutical intervention. In total, 49 full papers were obtained and reviewed. Research on midwives' knowledge of nutrition, and their skill set for nutrition counselling, is sparse and mainly related to weight management.

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Papers addressing breastfeeding and nutrition in developing countries were discarded. Eight full papers were obtained and included in this review.

### Focusing on dietary fibre

Clinical guidelines for both constipation and haemorrhoids in pregnancy focus on increasing the intake of dietary fibre, particularly wheat bran, and increasing fluids (Jewell and Young, 2001, NICE, 2010). Understanding how much fibre is needed is a key factor in effectively preventing and treating constipation, as well as knowing what the most useful food sources of fibre are.

### What is wheat bran?

Bran is the coarse outer covering or coat (seed husk) of cereal grain, such as wheat or rye. Wheat bran provides a source of dietary fibre, B vitamins, iron, magnesium and zinc. NICE guidelines refer to wheat bran specifically due to its high capacity to absorb water and provide bulk to faeces—giving it greater laxative effects compared to other cereal bran (Jewell and Young, 2001, NICE, 2010). Wheat bran is found in whole wheat foods such as whole wheat breakfast cereals, wholemeal pasta, wholemeal bread, items baked with wholemeal flour and foods with added bran, such as bran breakfast cereals, bran muffins and bran breadsticks.

### How much fibre is advised?

Little research has been conducted among constipated, pregnant women. However, Dukas et al (2003) found that among non-pregnant women, those with fibre intakes over 20 grams per day, particularly when combined with daily physical activity, were less likely to be constipated compared to those with lower levels of fibre intake and activity. Anti et al (1998) found that increasing fibre intake to 25 grams per day improved bowel movements

to 3.3 times per week, but 25 grams of fibre per day, combined with an increased fluid intake of at least 2 litres per day, significantly increased bowel movements to 4.2 times per week.

Only one intervention study has been carried out involving pregnant women experiencing constipation. Anderson et al (1986) gave 40 women in their third trimester an additional 10 grams of dietary fibre per day for 2 weeks either as corn-based biscuits or wheat bran. Baseline fibre intakes (20–21 grams) increased by 7.2 grams per day in the corn group and by 9.1 grams a day in the wheat bran group. Both intervention groups experienced an increase in the number of bowel movements and a softening in stool consistency. A review of interventions for treating constipation in pregnancy carried out by the Cochrane Collaboration concluded that supplementing diet with bran or wheat fibre as either food or fibre tablets is effective for treating constipation in pregnancy (Jewell and Young, 2001).

These studies combined appear to suggest a fibre intake of at least 20 grams per day, preferably 25–30 grams per day, is necessary to maintain a healthy bowel habit during pregnancy.

No official recommendations are made for fibre intakes during pregnancy or lactation in the UK. Other recommendations from around the globe suggest 28–30 grams of fibre/ per day (Table 1).

### How much fibre do pregnant women eat?

Little data exists regarding the nutrient intake of pregnant women. For example, the UK National Diet and Nutrition Survey (NDNS) (Bates et al, 2012) only provides data for adult women, showing that fibre intakes are low at 12.8 grams per day—under the 18 grams per day recommended intake.

**Table 1: Recommended fibre intakes for pregnancy (grams per day)**

Country/Area	Recommended fibre intake for adult women (grams per day)	Recommended fibre intake for pregnancy	Recommended fibre intake for lactation	Reported average fibre intakes	Fibre intakes reported among pregnant women
UK	25 grams	–	–	12.8 grams	12.4–17.4 grams
European Union (EU)/European Food Standards Agency (EFSA)	25 grams	–	–	–	19.4 grams
USA (Institute of Medicine (IOM), 2002)	25 grams	28 grams	29 grams	15 grams	10–18.8 grams
Australia and New Zealand (National Health and Medical Research Council (NHMRC), 2006)	25 grams	28 grams	30 grams	20 grams	20–21 grams

[Mouratidou et al, 2006; Snook Parrott et al, 2009; Hure et al, 2008; Blumfield et al, 2012]

Studies in the UK, USA and Spain have shown that food patterns and nutrient intake change little during pregnancy (Cucó et al, 2006; Rifas-Shiman et al, 2006; Verbeke and De Bourdeaudhuij, 2007; Crozier et al, 2009). Mouratidou et al (2006) found the nutritional intake of pregnant women in Sheffield to be broadly similar to those shown in the NDNS. It appears reasonable, therefore, to expect dietary patterns, fibre and other nutrient intakes to be comparable to those of non-pregnant women.

Where fibre intakes have been measured among pregnant women they are consistently low. This is the case not only in the UK (Derbyshire et al, 2006), but also across the globe (Table 1).

A recent meta-analysis of fibre intakes in pregnancy (Blumfield et al, 2012) showed that across all developed countries average fibre intake was 18.8 grams per day. Broken down into geographical regions, the results suggest slightly higher intakes in Australia and New Zealand (21.9 grams per day), followed by Europe (19.4 grams per day), North America (18.8 grams per day), the UK (17.4 grams per day) and Japan (15.1 grams per). All regions reported fibre intakes below their respective national recommended levels.

Of concern is the knowledge that the fibre intake falls among pregnant women as income falls, alongside many other nutrients in the diet (Rogers et al, 1998; Haggerty et al, 2009). Low-income pregnant women are therefore more likely to be at higher risk of the complications of a low-fibre diet during pregnancy.

It appears that, across the globe, pregnant women fall far short of the fibre intakes recommended to maintain good bowel health (Blumfield et al, 2012).

### Fluid intakes during pregnancy

The European Food Safety Authority (EFSA) recommends that the average woman consumes 2.0 litres of fluid per day, based on the assumption that 80% comes from drinks and 20% from food (EFSA, 2010a). An additional 300 millilitres per day is recommended during pregnancy and 700 millilitres per day while breastfeeding. The NDNS gives figures for suggested fluid intakes of women aged 14 years and over, with no indication of pregnancy status

(Bates et al, 2012). The average intake of non-alcoholic fluids (1583 millilitres) is just 79% of the EFSA recommendation, and if it is assumed that this does not change during pregnancy, this would represent just 69% of the recommended intake.

Derbyshire et al (2006) also found fluid intakes to be low among British women, particularly in the third trimester. In their prospective study following women during pregnancy and post-partum, constipated women reported fluid intakes of up to 400 millilitres per day lower when compared with non-constipated women over the three trimesters and immediate post-partum period.

Encouraging pregnant women to monitor their fluid intake and ensure they consume at least 2.3 litres per day is a simple step to promote good bowel health. In addition, women should be reminded that increased fluid is vital when undertaking exercise, particularly when ambient temperatures are warm, in order to avoid dehydration (EFSA, 2010b).

### Potential complications of a low fibre intake during pregnancy

#### Constipation and haemorrhoids

Constipation is one of the most common gastrointestinal complaints affecting up to 30% of the general population at any one time (Tytgat et al, 2003; Cullen and O'Donoghue, 2007), and during pregnancy, the risk of constipation increases. The incidence of constipation also appears to increase with parity and a history of a previous Caesarean section (Vazquez, 2010).

Constipation is typically defined using the standardised Rome III criteria; however, these are based on long-term symptoms which are not relevant to pregnancy (Rome Foundation, 2012).

In practice, diagnosis is less rigid and part dependent on the perception of normal bowel habits. If a woman has less than three bowel actions a week and is straining or passing hard stools, she is likely to benefit from a change in diet.

Many women assume that constipation is likely to be more of a problem in later pregnancy as the fetus gets bigger. In reality, although rates are high throughout pregnancy, incidence appears higher in the first two trimesters and drops in trimester three (Table 2). As the incidence of constipation is highest in the first two trimester of pregnancy, these studies appear to suggest that the hormonal changes, notably progesterone, have a greater influence on incidence of constipation compared to mechanical changes arising from the gravid uterus. However, Derbyshire et al (2006) reported a significantly lower water intake among constipated pregnant women in trimester one and Ponce et al (2008) documented a non-significant increase in fruit, vegetable, fibre and

**Table 2. Incidence of constipation during pregnancy and postpartum**

	Trimester 1	Trimester 2	Trimester 3	Trimester 4
UK women	35%	39%	21%	17%
Spanish women	30%	19%	22%	25%
American women	24%	26%	16%	24%

(Derbyshire et al, 2006; Bradley et al, 2007; Ponce et al, 2008)

water intake as pregnancy progressed. It is therefore possible that women constipated in early pregnancy begin to increase fibre and fluid intakes to alleviate their constipation. Although there is a paucity in the literature regarding the correlation between sickness in early pregnancy and constipation, dehydration may also play a part in explaining the higher prevalence of constipation at this time.

Figures reported by Saurel-Cubizolles et al (2000) confirm that constipation can continue to be a problem after childbirth with 17% of Italian mothers and 26% of French mothers reporting constipation 12 months after giving birth. This may be due to diet and lifestyle, but has also been attributed to muscle damage, forceps delivery, an increase in duration of the second stage of labour and high infant birth weight causing perineal trauma affecting the anal sphincter muscle (Cullen and O'Donoghue, 2007).

Haemorrhoids are common and are estimated to affect 50% of the population at some time in their lives (Wald, 2003). They are thought to affect between 25–35% of pregnant women (Staroselksky et al, 2008). Haemorrhoids are also a frequent complaint among women who have recently given birth—with rates of 25% in Australia, 53% in Spain, 21% in Italy and 26% in France reported by mothers in the 12 months following birth (Brown and Lumley, 1998; Saurel-Cubizolles et al, 2000; Tosal Herrero et al, 2001).

A number of factors are considered to contribute to the development of constipation and/or haemorrhoids during pregnancy, which are both hormonal and mechanical (Wald, 2003; Derbyshire et al, 2006; Cullen and O'Donoghue, 2007) (Figure 1). Hypothyroidism may also be a rare cause of constipation during pregnancy (Müller-Lissner et al, 2005). Low fluid and fibre intakes are also likely to be significant contributing factors. A systematic review of evidence (NHS Centre for Reviews and Dissemination, 2001) suggests that for a normal non-pregnant population, a low-fibre, low-fluid intake diet, together with reduced mobility, increases the risk of constipation.

### Does constipation in pregnancy matter?

The prime concern for many women is discomfort. However, Cullen and O'Donoghue (2007) report that straining to defecate can damage the pudendal nerve and impair the supportive function of the pelvic floor musculature. Impairment of the pelvic floor muscles can subsequently lead to utero-vaginal prolapse and it appears that constipation is as important a cause as obstetric trauma in the development of pelvic floor damage (Amselem et al, 2010). Raising the intake of fibre in pregnant women could therefore not only improve quality of life, but also help to reduce the occurrence of pelvic floor trauma.

### Treating and preventing constipation and haemorrhoids in pregnancy

Overall, the evidence for the effectiveness of treatment for constipation (fibre, fluid, bulk forming, osmotic or stimulant laxatives) during pregnancy is poor owing to the small numbers of interventions of low clinical quality (Jewell and Young, 2001; Vasquez, 2010). Current clinical guidelines focus on increasing wheat fibre and fluid (Table 3). In many cases, women will self-treat with home remedies or non-prescription preparations (BMJ Best Practice, 2010). Although figures are not available for the UK, Spanish data suggests that 11–15% of pregnant women use laxatives during pregnancy and 17% after giving birth (Ponce et al, 2008).

The evidence relating to pregnant women and constipation self-medication is only anecdotal and without firm empirical basis, so midwives often feel able to give generic rather than specific advice. Natural remedies such as prune juice, which has a laxative effect, have not been researched within this population, but may be beneficial as a non-pharmacological alternative. Again, however, midwives have to be careful when recommending remedies that can induce bowel movements due to the risk of abdominal cramping and the potential risk to the pregnancy. For this reason, remedies like these are not recommended without firm evidence.

As a result, the number of women that self-treat constipation with non-prescriptive alternatives is difficult to measure. There is also the problem of the under-reporting of symptoms and the embarrassment associated with discussing bowel habits. Increasingly, online parenting forums may

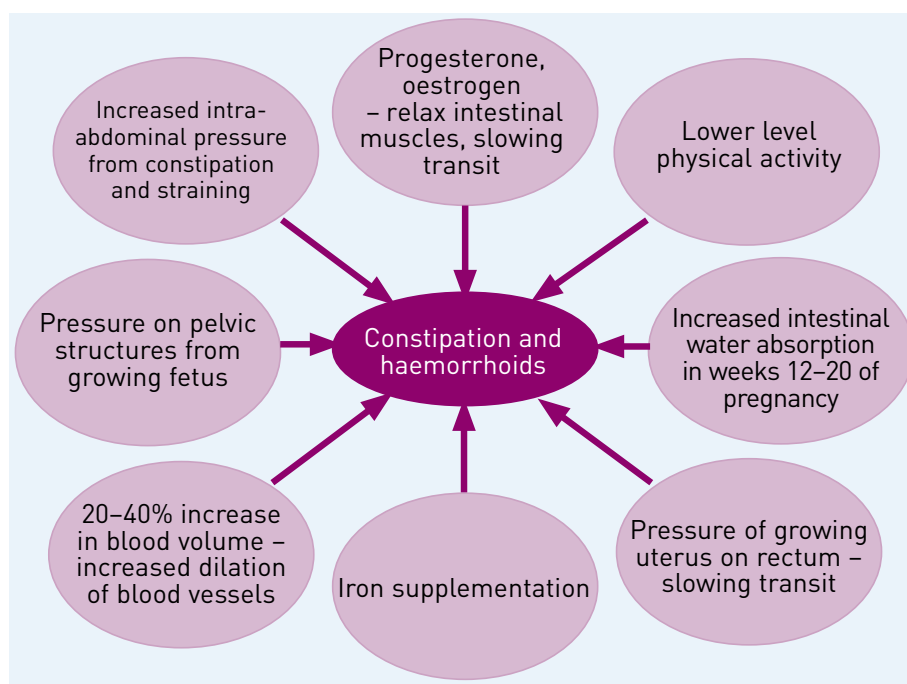


Figure 1: Factors contributing to constipation and haemorrhoids in pregnancy

provide the most useful and transparent source of information and discussion on such matters.

Where dietary measures fail to ease symptoms, bulk-forming laxatives are considered safest for long-term use as these are not absorbed into the body and therefore pose no risk to the baby (Trottier et al, 2012). Stimulant or osmotic laxatives may also be used for short periods, but are more likely to cause side effects, which causes them to generally less acceptable as some is excreted in breast milk (Jewell and Young, 2001).

The best treatment of haemorrhoids during pregnancy is prevention by increasing intake of fibre and fluids (Avsar and Keskin, 2010). Aside of prevention, treatment is mainly directed towards care of the local area with suppositories and topical creams

containing local anaesthetics, mild astringents or steroids. Bathing in warm water usually helps to relieve anorectal pain. Used in combination with anti-constipation measures of increased dietary fibre, fluids and stool softeners, topical creams and pain control are sufficient for most cases of haemorrhoids during pregnancy (Wald, 2003; Starolesky et al, 2008; Quinjano et al, 2010). Where pain is severe, surgical excision may be required. For many women haemorrhoids will resolve spontaneously after birth (Quinjano et al, 2010).

### Other benefits of a higher fibre intake

As long ago as 1953, Hipsley suggested that low fibre intakes could be associated with pre-eclampsia and recent work confirms this link (Frederick et al, 2005; Qui et al, 2008). Pregnant women with higher intakes of fibre (>24 grams per day) were 54% less likely to experience pre-eclampsia compared to those with the lowest fibre intakes (<13.1 grams per day). Results were similar for potassium intake. These results suggest that diets high in both fibre and potassium may reduce the risk of pre-eclampsia during pregnancy.

Fibre has also thought to play a role in blood sugar control during pregnancy (Zhang et al, 2006). For example, among women with type 1 diabetes, insulin requirements were 16–18% lower with a higher fibre intake (20.5 grams per day) compared to a lower fibre intake (8.1 grams per day) (Kalkwarf et al, 2001).

Data from the US Nurses' Health Study (Zhang et al, 2006) shows that for each 10 gram per day increase in total fibre the risk of gestational diabetes fell by 26%. However, other studies show no difference in fibre intake between women with normal glucose tolerance and those with glucose intolerance or gestational diabetes (Wang et al, 2000; Radesky et al, 2008). A 2011 Cochrane review of dietary advice to prevent gestational diabetes concluded that while results were promising, evidence for high fibre diets is insufficient at present to change practice (Tieu et al, 2011). More research is needed in this area to further evaluate the association between fibre and gestational diabetes.

### Tackling the problem

While current fibre intakes and the level of increase required to support bowel health during pregnancy can be identified, a key question is whether midwives possess sufficient knowledge of nutrition to effectively advise women about fibre intake. Despite NICE guidelines (2010) stating that health professionals should advise women about healthy eating during pregnancy, nutrition training for midwives is minimal. Pregnant women have been shown to have high levels of interest in nutrition and to favour the

### Table 3: Clinical guidelines and recommendations

#### Antenatal care: Routine care for the healthy pregnant woman. NICE Clinical Guideline 62

- Women who present with constipation in pregnancy should be offered information regarding diet modification, such as bran or wheat fibre supplementation (NICE, 2010:21)
- In the absence of evidence of the effectiveness of treatments for haemorrhoids in pregnancy, women should be offered information concerning diet modification. If clinical symptoms remain troublesome, standard haemorrhoid creams should be considered (NICE, 2010:22)

#### The Cochrane Collaboration Interventions for treating constipation in pregnancy (2012) (Jewell and Young, 2001 AQ1-How can this be 2001?)

- Dietary supplements of fibre in the form of bran or wheat fibre are likely to help women experiencing constipation in pregnancy. If the problem fails to resolve, stimulant laxatives are likely to prove more effective [AQ2- Page number please]

#### Constipation, Haemorrhoids, and Heartburn in Pregnancy (BMJ Best Practice, 2010)

- It seems reasonable to recommend an increase in the intake of fibre during pregnancy to women with known dietary fibre deficiency. Fibre should be given in the form of foods such as wheat, vegetables, and wholemeal bread. However, caution should be exercised about the amount of dietary fibre intake, because some studies have shown that high intakes of non-starch polysaccharide may result in calcium, iron, or zinc deficiencies during pregnancy—although these results have been controversial
- Despite the lack of evidence, increased fluid intake should be recommended as one of the first measures to relieve constipation in pregnancy. Increasing fluid intake is not expensive, is readily available, and has several other beneficial effects during pregnancy
- The association of constipation with a low-fibre diet and low fluid intake has been well established in epidemiological studies. It seems reasonable, therefore, to recommend a diet high in fibre and fluids to prevent haemorrhoids in pregnant women. However, the benefit of increased fibre or fluid intake for the relief of symptoms associated with haemorrhoids has yet to be assessed in Randomised Controlled Trials

internet, midwives and books as sources of nutrition information (Szwajcer et al 2009; 2012). Therefore it is important for a 21<sup>st</sup> century midwife to be able to deliver nutritional information with confidence and, if appropriate, signpost women towards other sources of information.

Research suggests that midwives lack confidence in giving dietary advice to their patients. For example, MacCleod et al (2012) found that knowledge of diet and weight management for pregnancy is low among midwives in Tayside and, as a result, confidence to discuss this with women was also low. A similar lack of confidence has also been found among midwives in other areas of the UK (Mulliner et al, 1995; Olander et al, 2011). Pre- and postnatal women in the

Midlands show a desire for more support on healthy eating from health-care professionals, requesting advice early in pregnancy that is practical and easy to implement (Olander et al, 2012).

Research in the Netherlands has shown that written nutrition information was rarely consulted and served no practical purpose (Szwajcer et al, 2009). The current UK practice of providing written dietary information on increasing fibre intake in the *NHS Pregnancy Book* (Department of Health, 2009) may therefore be of little benefit to many women seen.

If midwives are to help women increase their fibre intake during pregnancy and beyond, any nutrition advice given therefore needs to be engaging, confident and practical.

**Table 4. Easy ways to boost wheat bran intake**

Food	Fibre per 100 grams (approximately equal to wheat bran content)	Fibre per typical portion (approximately equal to wheat bran content)	Wheat bran increase in swapping from a lower fibre food (approximately equal to wheat bran content)
High bran cereal	27 grams	11 grams	Swapped from cornflakes = extra 10.5 grams
Wholemeal spaghetti	3.5 grams	7.7 grams	Swapped from white spaghetti = extra 5 grams
Wholemeal tortillas	6.4 grams	2.6 grams	Swapped from white tortillas = extra 1.5 grams each
Bran biscuits	16 grams	6.4 grams	Swapped from chewy cereal bar = extra 4.5 grams
Bran flakes	15 grams	6 grams	Swapped from mixed grain flakes = extra 5.4 grams
Wheat pillow-style cereal	11.6 grams	5.2 grams	Swapped from sweetened puffed wheat = extra 4 grams
Malted wholewheat cereal	9.9 grams	3.9 grams	Swapped from porridge = extra 2 grams
Wholemeal pitta bread	6.2 grams	3.9 grams	Swapped from white pitta = extra 2.5 grams
Mini wheat pillows	8 grams	3.2 grams	Swapped from puffed rice = extra 3 grams
Wholemeal pastry	6.3 grams	3.2 grams	Swapped from white pastry = extra 2.1 grams
Wholemeal flour	9.0 grams	2.7 grams (one tablespoon)	Swapped from white flour = extra 1.8 grams
Wholemeal bread	5.0 grams	2.6 grams (two slices)	Swapped from white bread = extra 1.8 grams (two slices)
Wholemeal scone	5.2 grams	2.6 grams	Swapped from white scone (extra 1.7 grams)
Oat-based biscuit	3.5 grams	1.0 grams	Swapped from Rich Tea-type = extra 0.5 grams

(Food Standards Agency, 2002)

## Key points

- Constipation and haemorrhoids affect up to 40% of women during pregnancy, and in many cases can be avoided or treated by simple lifestyle measures to increase fibre (especially wheat bran) and fluid intake
- Clinical guidelines consistently advise increasing fibre, particularly wheat bran, and fluid intakes during pregnancy but fail to state how much fibre should be consumed or where this can be found in the diet
- Most women need to increase fibre intake by 10 grams per day to avoid constipation in pregnancy
- Midwives are not adequately trained in nutrition and lack both the knowledge and confidence to provide women with advice to increase fibre intake

Fibre can be divided into two different types—insoluble (e.g. bran and wheat fibre) and soluble (e.g. beans and fruit etc.) The clinical guidelines referred to in *Table 3* emphasise wheat bran as the fibre of choice for both preventing and treating constipation. Each 1 gram of wheat bran absorbs more than five times its weight in water, giving a 5 gram increase in stool weight—a greater increase than found with any other fibre type (Cumplings, 1993). These effects have been recognised by the EFSA Approved Health Claims (EFSA, 2010b) for wheat bran, which state that ‘wheat bran fibre contributes to a reduction in intestinal transit time’ and ‘wheat bran fibre contributes to an increase in faecal bulk’ (EFSA, 2010b:2). Soluble fibres dissolve to form a gel in the digestive tract, assisting with blood sugar control and cholesterol reduction, but with lesser effects on constipation. Soluble fibres are fermented by bacteria living in the gut (with beneficial effects) and so can give rise to excessive flatulence in some more susceptible individuals (Gélinas, 2013).

Based on intakes of fibre and the national recommendations reported here, it appears that the average pregnant woman in the UK would benefit from an increase in fibre of at least 10 grams per day, and an increase in fluid intake of at least 700 millilitres each day.

Some will worry about the side effects of increasing fibre, such as flatulence and bloating; however, these effects are generally transient and pass within the first 2 weeks (Smith et al, 2001), particularly if changes are made gradually and accompanied by an increased fluid intake.

The easiest way to identify high fibre foods is to check the ingredients list for wheat bran and the nutrition panel for fibre content. Where ‘high in fibre’ is highlighted on the front of pack, the food must by law contain at least 6 grams of fibre per 100 grams of food. However, ‘wholegrain’ does not provide any indication as to fibre content and may

appear on foods containing relatively little fibre. Foods containing 6 grams or more fibre per 100 grams of food are high in fibre, and those with at least 3 grams of fibre per 100 grams of food are a good source of fibre.

Human beings are creatures of habit, and so changing a food that they are already eating may require less effort than introducing completely new foods. Easy opportunities to increase fibre intake usually include breakfast—where a bowl of fibre-rich cereal and fruit could provide more than half the additional 10 grams fibre recommended. *Table 4* shows easy food swaps to boost wheat bran intake, and recipes and meal ideas can be found on the Start4life website.

## Limitations

The information contained in this paper relates to singleton pregnancies as none of the studies reviewed addressed the needs of a multiple pregnancy. Ethnicity has also not been considered in relation to bowel health, making it impossible to generalise these findings to the pregnant population as a whole. Clearly, eating habits and dietary intake may be vastly different between different cultures and an area which would warrant further research.

While it is routine to ask about a woman’s bowel habits, many women in the UK are consuming too little fibre and fluids and, as a result, are probably constipated to some extent before they conceive. Pregnancy is an ideal opportunity to emphasise the importance of fibre and fluid and the vital role they play in preventing constipation and its complications. At present, written advice provided to pregnant women contains little practical information as to how much fibre to consume and where this can be found in the diet. Discussion of simple information, such as that provided in *Table 4*, tailored to local eating habits could have a dramatic impact on the quality of life and bowel health for all pregnant women.

Nutrition is important during pregnancy. It is imperative therefore, that health-care professionals responsible for the care of pregnant women have nutrition knowledge specifically related to pregnancy. This review highlights not only the lack of clear guidance for midwives on how much fibre, and from which foods, to advise during pregnancy but also the current lack of knowledge and confidence among midwives to deliver practical dietary advice to the women in their care. However, no research specifically addresses knowledge and confidence in advising on diet and lifestyle modification for either the treatment or prevention of constipation and haemorrhoids and so this is an area urgently requiring exploration.

In an ideal world, dietary advice would be provided by a registered dietitian to all pregnant mums; however, the reality is that dietetic services are severely overstretched and only women with problems such as hyperemesis or diabetes are likely to ever see a dietitian. In some areas, dietitians are able to provide training for midwives to help develop their knowledge and skill base, and local midwifery teams should explore this option. It is important for midwives to establish collaborative links with dietitians in order to ensure best practice provision and enhance patient care (Elias and Stewart, 2005). While midwifery education aims to prepare midwives for independent midwifery practice, there is currently a gap in the curriculum regarding specific therapeutic dietary advice. The umbrella title of health promotion, in which healthy eating sits, does provide student midwives with basic advice on nutrition. Course leaders could look to New Zealand for ideas on how to fill this nutrition gap as changes to midwifery curriculum have been made to achieve midwives competent in providing sound nutrition advice to women during pregnancy (Elias and Stewart, 2005). However, the clear gaps in the research base in relation to specific dietary advice regarding bowel health makes curriculum development for both student midwives and registrants challenging.

The need for development of clear guidance takes time—whether at national or local trust level. In the meantime, this paper provides ‘food for thought’ as to the type of information midwives could deliver to women in order to minimise the symptoms and discomfort of constipation and haemorrhoids **BJM**

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