What is being conveyed to health professionals and consumers through web and print sources of nutrition information?

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Abstract

Nutrition misinformation can be harmful. Within dietetics there is an acknowledgement that nutrition information should be consistent, science-based and made relevant to different segments of the population. This paper reports on a study, conducted in Scotland, which involved focus groups and interviews with consumers and health professionals to explore messages relating to a healthy diet and to starchy foods and foods high in fat or sugar in particular. The research also involved a discourse analysis of articles aimed at health professionals and consumers. Evidence based, clearly written web and print articles were not the norm. Many articles contained value-laden messages and inconsistent or unclear advice. Nutrition information was rarely contextualised for consumers to help them incorporate the advice into their daily lives. Consumers and health professionals reported feeling 'bombarded' by messages about diet, which was sometimes confusing. There is considerable scope for improving nutrition messaging in Scotland.

Keywords: nutrition messages; discourse; consumers; health professionals; communication

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Introduction

The Food Standards Agency in Scotland (FSAS) and the Scottish Government are committed to improving the nation's health and tackling health inequalities. In order to achieve this, increasing the proportion of people in Scotland who eat a healthy balanced diet is seen as essential. A healthy balanced diet plays a key role in preventing diet-related disease and can help people maintain a healthy weight. The FSAS is working closely with the Scottish Government to ensure a consistency of approach. The government has introduced a number of policies aimed at improving the nation's diet, most recently, Preventing Overweight and Obesity in Scotland: A Route Map Towards Healthy Weight (Scottish Government 2010) and the Obesity Route Map Action Plan (Scottish Government 2011). Included in the FSAS's strategic plan is the aim to provide consumers with reliable, up-to-date information about food to help them make informed choices (Food Standards Agency 2011).

Whilst dietitians may be best placed to give dietary advice to individuals, there are not enough of them to guide all consumers or patients (McClinchy et al. 2011). In addition many people do not routinely come into contact with these professionals unless they have a specific problem requiring targeted dietary advice. It is likely, therefore, that other health professionals coming into contact with patients may be in a position to facilitate changing dietary knowledge, beliefs and behaviour. This might include giving nutrition advice to patients or commenting about resources containing such advice.

Primary care is increasingly viewed as an appropriate setting for the delivery of health promotion, including nutrition advice (Hankey et al. 2004). While some primary care practitioners concur with this view, many GPs do not see their role as one which encompasses the giving of dietary guidance (Fuller et al. 2003), perceiving that practice nurses are better placed in this regard (McClinchy et al. 2011). Some studies have found that, compared to dietitians, a sizeable proportion of primary care health professionals have significant gaps in their nutrition knowledge (Moore et al. 2000; Ho et al. 2011; McClinchy et al. 2011). Whilst dietetics professionals often see themselves as the primary source of nutrition education for their medical and allied health professional peers (Ayoob et al. 2002), it is difficult to determine whether this happens in practice. It is particularly troubling that one study found little difference between the nutritional knowledge and beliefs of patients and the knowledge and beliefs of health professionals (Barratt 2001).

Some patients have expressed trust in the nutrition guidance they receive from the health professionals they come into contact with (Moore et al. 2000) whereas others see such guidance as ineffective (McClinchy et al. 2011). Other patients express frustration if given non-specific advice by primary care practitioners (for example, 'make sure she eats a balanced diet' (McClinchy, Dickinson et al. 2011:8)), preferring instead to receive specific information about what should be eaten and in what amounts (McClinchy et al. 2011; Boylan et al. 2012). Other patients do not like advice that is perceived to be prescriptive and believe that advice should include guidance about the consumption of less healthy foods as these are viewed as being 'part of life' (Boylan et al 2012: 13). The media are frequently cited as an important source of health and nutrition advice by the general public (Ayoob et al. 2002; Ostry et al. 2008) and some patients report that the media provide less biased information than do health professionals (Boylan et al. 2012). A Canadian study (Ostry et al. 2008) which examined whether online information was aligned with official dietary guidance found

that 45% of the websites analysed were incongruent with official advice. The involvement of health professionals in the writing of web-based articles only slightly improved the likelihood that nutrition advice met dietary guidelines (Ostry et al. 2008).

Nutrition misinformation can be harmful; within dietetics, therefore, there is an acknowledgement that information should be consistent, science-based and made relevant to different segments of the population (Ayoob et al. 2002). This includes taking account of cultural, ethnic and social differences and preferences (Boylan et al. 2012). Effective nutrition messages should be concerned with dietary improvement rather than advocating dietary perfection (Borra et al. 2001). Nutrition messages which conflict with consumers' existing eating habits are powerfully resisted therefore advice should complement rather than contradict current diets (Kelly and Stanner 2003).

Little is known about the sources of information which non-dietetic health professionals draw upon in their practice. One study reported that GPs and practice nurses said that scientific journals and their professional training provided them with adequate nutrition education despite the fact that their knowledge was found wanting, particularly in terms of translating basic nutrition information into advice for patients (Murray et al. 1993). Anecdotally, discussion between the authors and a range of health professionals (including health visitors, nurses, dietitians and nutritionists) about the publications and resources they and their colleagues read or accessed highlighted that nutrition knowledge was informed by a range of information sources, drawn on as and when the information relating to nutrition or healthy eating was needed within their professional practice. Sources included professional and popular/lay sources of information.

Dietary recommendations in the UK include that, as part of a healthy balanced diet, consumers should base their meals on starchy foods and reduce their intake of foods high in

fat and/or sugar (http://www.eatwellscotland.org/healthydiet/eatwellplate/). Research has shown that consumers have difficulty in understanding messages about the types and proportions of food which make up a healthy balanced diet (Prior et al. 2011), which implies it may be important to better understand where misunderstandings arise.

The objectives of the paper are to explore some of the materials and key messages about starchy foods and foods high in fat or sugar which are available to consumers and health professionals; to identify the ideologies and discourses evident in such material; and to make recommendations for improvements to the messaging around starchy foods and foods high in fat and/or sugar in Scotland.

Methods

Adopting a qualitative approach meant we could meet the aims of the research through an in-depth examination of poorly understood phenomena (Draper 2004). In addition, using discourse analysis to explore sources of nutrition messaging meant we could explicitly acknowledge that language is more than just words, it is illustrative of the political, social or economic context within which words are produced (Fairclough 2001; Shaw 2010). We were also interested in the ideologies being presented or created in the materials of interest. Ideologies are representations of particular kinds of knowledge. Nutrition information, for example, might represent scientific fact, but this can be corrupted, either by/at the source or in the way it is interpreted by different audiences. In this way, corrupted ideologies can instigate particular kinds of discourse or social effect (Fairclough 2003).

The research underpinning this paper consisted of two studies, set up to explore the healthy eating information available to consumers and health professionals and the way they understand this information. The first study used focus groups and interviews and involved the fourth author.[1] This was conducted simultaneously with a discourse analysis of various

sources of nutrition information conducted by all four authors.[2] Findings from the two studies are drawn together here as they are complementary and contribute to the evidence base about messaging and nutrition information.

Focus groups and interviews: recruitment and study design

Focus groups were organised with consumers, health improvement professionals, community dietitians and 'other' health professionals (GP practice nurses and cardiac rehabilitation nurses). Depth interviews were conducted with professionals involved in nutrition policy or nutrition organisations in order to identify how such professionals helped their peers keep abreast of developments in the field.

Eight focus groups (Lehoux et al. 2006) were conducted with consumers across different parts of Scotland, each involving 6-8 individuals. More women than men participated (37 women; 19 men); this partly reflected the need to recruit individuals who had a major role in food provision for their household. Market research fieldworkers worked door-to-door to recruit participants, using a screening questionnaire to ensure heterogeneity in terms of socio-economic status and urban/rural location. To cover travel/childcare expenses and to encourage people who might not ordinarily take part in research to participate, individuals were each given £30 in cash.

To recruit health professionals involved in giving the general public advice about healthy eating, contact was made by telephone to health boards and Community Planning Partnerships across Scotland. Seventeen health professionals were recruited and each was given £50 to cover their time outside of normal working hours. Whilst it was anticipated that focus groups would be conducted involving a range of health professionals, after the first group was convened with seven health improvement/other health professionals it was felt that

smaller focus groups involving groups of 'similar' professionals would be more effective. Individuals having similar work roles meant that topics were easier to cover in more detail in three subsequent focus groups held with 3-4 health professionals.

Three depth interviews were also conducted (Kvale 2007); two involved individuals from health and nutrition organisations and one interview was conducted with a senior health promotion professional at a Scottish health board.

Topic guides were designed to elicit information from consumers and health professionals on their knowledge and awareness of messages about starchy foods and foods high in fat and/or sugar. In particular, the discussions focussed on where messages were seen or heard; what these messages consisted of; and whether these messages were perceived to influence one's own (consumer focus groups), patients' (health professional focus groups) or consumers' (nutrition stakeholder interviews) food intakes. Focus groups and interviews were facilitated by experienced market researchers; proceedings were digitally recorded with the permission of participants and transcribed verbatim. Focus groups lasted 2 hours and interviews for 1 hour.

Discourse analysis: Selection of sources and the research approach

We were guided by the steps for conducting discourse analysis outlined by Potter and Weatherall (Potter and Weatherall 1987). An initial list of potential sources for the analysis was drawn up by the four authors. This included websites and magazines aimed at nutritionists and dietitians; websites, journals and magazines aimed at other health professionals (namely GPs and nurses, including practice and community/public health nurses, such as health visitors) and websites and resources which focused on dietary messages which were aimed at consumers. Some sources were written and published by commercial organisations, some by charities and some websites present Government or

'official' advice. The list was discussed with academic colleagues and health professionals, including health visitors, nurses, nutritionists and dietitians. New sources were added to the list as a result of these discussions. Two members of the team then conducted an initial trawl of each of the sources in order to ascertain:

- Whether there was any content relating to food, diet or nutrition and within that:

- Whether there was any content relating to starchy foods/carbohydrates and their incorporation into a healthy, balanced diet

- Whether there was any content relating to foods high in fat or sugar and their incorporation into a healthy balanced diet

The initial searching of each source raised a number of issues which were discussed by the whole team. The decisions taken informed the main stage of the analysis, including clarifying the inclusion and exclusion criteria (see Appendix 1).

Appendix 2 highlights which sources were included in the main stage of analysis, including details of the sub-sections of web sources which were examined in detail and the way that print articles were sampled.

Analysis

The approach to analysing the focus group and interview data was an on-going process involving reflection amongst the researchers, theorizing, asking further analytical questions of the data and discussion (Ritchie and Lewis 2003; Smith and Firth 2011). Regular team meetings were used to discuss emergent findings and to refine interpretation of the data. This helped to ensure rigour as new insights and alternative interpretations were discussed collectively (Moran-Ellis et al. 2006). These discussions also informed subsequent fieldwork. The researchers clarified the 'top level' findings and implications during a data workshop

after fieldwork ended. A framework of substantive themes and sub-themes was developed and this was input into the software package NVivo, version 9.2. Transcripts were then systematically analysed for key points and illustrative verbatim comments.

With regard to analysing the web and print articles, material that included information relating to a healthy, balanced diet and specifically the consumption of starchy foods and foods high in fat or sugar were read and coded according to the discourses and ideologies that were identified (Potter and Weatherall 1987; Fairclough 2003). As well as examining each source for how it corresponded with nutritional advice offered by for example, the eatwell plate (http://www.eatwellscotland.org/healthydiet/eatwellplate/) and other current government advice, we also looked for evidence of ideology or discourse that ran counter to current official healthy eating advice in Scotland.

The validity of the overall analysis was improved through continually examining the data for rival explanations, and regular sharing of data and analytical notes between members of the research team (Boyatzis 1998). Some sources were analysed by more than one member of the team to check the consistency of the analytical approach.

Three of the authors initially independently read a selection of the sources and recorded instances when starchy foods (and carbohydrates) and foods high in fat or sugar were mentioned. Each researcher also noted their observations about the dominant ideologies and discursive positions which emerged from the texts in relation to starchy foods/carbohydrates and foods high in fat or sugar and these were discussed collectively. Each source article was then re-examined to document the parameters of the major emergent themes (whether, when and in which contexts the themes were evident). The analysis was logged in an Excel spread sheet for each source.

Findings

We first utline the findings relating to perceptions of healthy eating messages in general, and then turn to messages on foods high in fat and/or sugar and starchy foods specifically. We then draw on some of the findings about the format and presentation of messaging. To provide some context for these findings, we start by exploring how information on diet and nutrition is disseminated to health professionals by organisations and how health professionals report that they remain up-to-date with developments within nutrition. Extracts from focus group and interview transcripts and from print/web articles are used to illustrate the findings. Print and web extracts are not attributed to their source due to organisational sensitivities and the fact that web content may no longer be available online though we do describe if the source was aimed at consumers or health professionals. The sources were examined between October-December 2011.

How do health professionals seek/obtain information about a healthy diet?

Information was disseminated by diet and nutrition organisations in a variety of ways to members and other interested health professionals. Up to date evidence from scientific research was reported to be disseminated via websites, newsletters and publications as well as via training courses and conferences. One organisation's newsletter also contained promotional material supplied (and paid for) by commercial companies though the organisation reported that it did not endorse this information.

Some health professionals reported that they attended conferences or training courses to remain up to date on specific topics. Most said they read material in their own time. Dietitians reported using the resources available through the British Dietetic Association website as

well as subscribing to publications/magazines aimed at them. Dietitians were reported to be useful sources of information consulted by other health professionals. Nurses, for example, said that 'the dietitian' kept them up to date with the latest research. Dietitians, however, felt that they ought to do more to keep non-dietetic colleagues up to date; they felt partly responsible for the potential for health professionals to disseminate inaccurate information.

> We are a very small resource [and] as dietitians and we would, in an ideal world, love to be a bigger resource and be able to go out and give more teaching to some of the health professionals who maybe need updat[ing]. I can understand sometimes when they do start giving their own messages, because they feel they have got no one else to turn to, so they feel that giving someone some information is better than none. (Dietitian)

All health professionals were aware of the Government's eatwell plate and most used this when providing advice to their clients on healthy eating. Health professionals also reported using resources from organisations such as NHS Health Scotland, the British Heart Foundation and the national diet and nutrition resource, NDR-UK.

There was no evidence from the focus groups to suggest that health professionals were using materials sent to them by food manufacturers. Such materials were viewed with scepticism and seen as promoting specific brands. It was clear that health professionals only viewed as credible materials approved by their professional organisations.

> You don't want to be seen to be advertising a certain brand of product because within our professional standards we have got to be seen to be using generic names or, if we're given an example of a specific food, we have to give examples, so it doesn't look like we're promoting a certain brand. (Dietitian)

Consumer and health professional perceptions of healthy eating messaging

Amongst consumers and health professionals there was broad consensus that people were 'bombarded' with messages about the health benefits and risks of consuming different food types. Stories published by the media were often referred to as being unreliable and changeable. Health professionals commented that, often, the media reported on controversial stories about diet rather than sticking with stories based on sound nutritional advice.

> I don't think the media helps at all because they will always pick up on little bits of research and promote them as a new consensus of science and that's confusing for the general public. [...]; they try to find an angle that is controversial and different to the key messages in a lot of cases. (Representative from a diet and nutrition organisation)

Dietitians and representatives from diet and nutrition organisations were concerned about the lack of consistency in the information given out by non-dietetic health professionals. It was generally felt that such professionals were not 'up to speed' and drew on capricious sources of information such as out of date leaflets and unreliable internet websites.

> Health professionals themselves can be a problem in terms of keeping up with the latest advice [and] giving out consistent information. […]. A lot of them are getting their information from unreliable sources […] because they are looking it up on the internet and they don't know which are the best sites […] and so some of the advice that has been given out is really quite old, a lot of non-evidence based information. (Representative from a diet and nutrition organisation)

A plethora of messages about healthy eating were generally considered to be available and this was viewed, by consumers and health professionals, to be 'confusing', leading many

people to ‘switch off’. Some health professionals perceived this led to people picking up messages to support ‘what they want to hear’.

The focus group research revealed confusion about the messaging that consumers and health professionals are exposed to. While external messaging, such as that produced by the media, cannot be regulated, when messaging comes from within government or is aimed at qualified personnel working in bodies such as the National Health Service (NHS), it is important to ensure that information is accurate and of a high quality. We turn now to findings from examining web and print sources of nutrition messaging.

Discourses evident in healthy eating messages

Some of the material we analysed was evidence based (in terms of presenting current nutritional advice) and clearly written; it contained well-defined guidance, explained the science behind the message, repeated it appropriately throughout the material to reinforce its message and used neutral (value-free) language. For example:

> Children should be discouraged from having fizzy drinks and squashes as they erode teeth and provide no nutrients. Such drinks should be heavily diluted and served in cups not in bottles. (Web/downloadable source aimed at health professionals)

The delivery of healthy eating messages as described above was not, however, the norm across the sources analysed. Many articles contained inconsistent and confused messages, either across sites/publications and sometimes even within an article. For example, one website aimed at health professionals described ‘the four food groups*’* quickly followed by the ‘five food groups’ and another talked about obesity prevalence and eating habits amongst 11-16 year olds in a section focusing on children aged 1-5 years. Some consumer sources

jumped from delivering general healthy eating advice (e.g. ‘eat together with your children’; ‘it is normal for children to reject some foods’) to science-heavy language; and/or provided scant information (e.g. two sentences) in some sections and lengthy guidance in others (e.g. whole pages). This represented quite a leap in terms of both the language and approach presented.

Occasionally, a value- and doom-laden ideology about eating a healthy diet and about foods high in fat or sugar was described. This was particularly the case in guidance aimed at parents, teenagers or those wishing to lose weight. These materials often came across as taking a ‘top down’ approach; that the source ‘knows best’ but was not willing to clearly articulate all the details for the ‘ignorant’ reader; such sources anticipated that the reader would have the same values as it does. For example:

> At Christmas we’re always surrounded by lots of lovely food and drink. Whilst there is no reason to feel guilty about enjoying yourself, it’s worth remembering that, on average, people gain about 5lbs (2kgs) over Christmas. Now you know why Santa is such a jolly fellow! (Web source aimed at health professionals and consumers)

The article assumes that everyone can afford to purchase ‘lots of lovely food and drinks’, that they will feel guilty about what they eat at Christmas and that putting on weight relates to being a ‘jolly fellow’. Such articles sometimes appeared overly determined to get their message across but risked the opposite because of the way they were written; typically, the language aims to connect with consumers but the style lacks clarity. One web source aimed at parents included, for example, ‘You'll … discover toddler unfriendly food with healthy alternatives’; it is not clear what is meant by ‘toddler unfriendly foods’ and why these are deemed, automatically, to be unhealthy foods.

In the following extract, from a consumer-facing website, ‘healthy snacks’ and ‘fatty foods’ are referred to but not defined; the source does not define how often a child needs to ‘keep asking’ for a parent to determine what is too often and rather than specify that food or drink high in fat or sugar be avoided it simply says that high calorie food is inappropriate for toddlers: ‘Does your tot keep asking for sweet and fatty foods? Have healthy snacks to hand to avoid denting their appetite with high-calorie food like sweets, biscuits and crisps’.

Opinion pieces and columns in magazines, even when written by or for dietitians or other health professionals, were, often, not clearly written. The language and tone used was often biased or provocative yet the fact that this represents the *opinion* of an individual is not made clear to the reader. This example is from a reflective article written by a practice nurse:

> ‘Eh up, fat lad, who ate all the pies?' would not go down too well. We would be accused of inflicting psychological damage. However, the government has stated that we must address it, as with most things that have become medicalised. 'But he'll only eat chips and crisps,' whine the parents. Surely he would soon tuck into meat and two veg if allowed to experience true hunger. (Print source aimed at health professionals)

This type of article seemed to represent a particularly confusing and misleading format regarding the delivery of clear, evidence based dietary messages.

The eatwell plate was referred to in some sources but this was often not well integrated with other guidance. For example, the eatwell plate has five segments, as shown on one webpage, but ‘four food groups’ were referred to in the accompanying article. Another article, aimed at nurses, provided a link to the eatwell plate but no further information in the text itself therefore relying on the motivation of the reader to take further steps to access the additional information. One government-linked website providing advice for encouraging toddlers to eat healthily gave a link for further information that took the reader to a BBC website; this gives

the impression that the BBC are as credible a source of nutritional information as the government.

Sources drew mainly on nutritional science with little incorporation of social science evidence. This meant that the evidence was not contextualised to include or take account of some of the factors which consumers' eating habits are influenced by, such as socio-economic status and ethnicity. Some sources contained complex nutritional science but in messaging aimed at non-nutrition audiences, e.g. nurses, which might limit their impact. Conversely, some articles aimed at nurses contained generic messages about diet with little specific guidance about advising patients in primary care settings. Few of the materials analysed provided references to scientific papers, links to further evidence or stated when the evidence was due to be reviewed, though there were a few notable exceptions.

There was a reliance on the term 'healthy', with references to 'healthy food' or 'healthy snacks' in some sources and with others describing 'healthy diets' and the foods which these could contain. Over-use of the term 'healthy' weakens the overall discourse about 'what/how to eat' because it can be interpreted in so many ways; its ubiquitous use risks it becoming meaningless.

Overall, there was a limited focus within most articles on the diets and foods eaten by different ethnic groups and a preponderance of advice aimed at parents, children and teenagers. Sources aimed at health professionals without a nutrition/dietetics background contained very few articles about eating a 'healthy diet'.

Messages about foods high in fat or sugar

Participants in the consumer focus groups were generally aware of messages advocating the need to eat foods high in fat or sugar infrequently although some were confused about the frequency and portion size this might relate to. Health professionals and professionals working for diet and nutrition organisations reported that consumers also misinterpreted messages about 'good' fats to mean that these fats that could be consumed frequently. In addition, it was felt that consumers took on board messages about foods being low in fat without any consideration of whether the food was high in sugar. For example, one nurse said: '[Low fat] yoghurts are a major problem for people [because] they don't realise that [although] it is low in fat, it is actually high in sugar, the same with jams and all those types of thing'.

When articles gave advice about foods high in fat or sugar (particularly sugar), the rationale behind this was rarely given. The following example, from a website aimed at parents weaning their babies, is typical in this regard; it states why salt should not be added to food for babies, but not sugar: 'remember not to add any sugar or salt to your baby's food – salt can damage her kidneys'. There were some exceptions, particularly in relation to messaging describing the links between sugar and dental caries.

How to incorporate foods high in fat or sugar into a healthy balanced diet was not clearly defined or described. Very often articles described not eating 'too much', or 'restricting' intake of foods high in fat or sugar rather than specifying an amount or a portion size, for example: 'it's fine to have [food and drinks high in fat or sugar] but only in small amounts'. Most sources analysed used phrases like 'as a treat', 'use occasionally', 'limit the use' in relation to foods high in fat or sugar. With regards to recommendations about when to eat/avoid snacks, many sources recommended that foods high in fat or sugar should only be eaten with a meal. There was some confusion, however, over what these foods were. One web source intended for health professionals included a list of snacks that contain 'quite a lot

of sugar' such as rusks, plain biscuits and fruit scones - another listed these foods as being *low* sugar snacks. Another source stated that dietitians could recommend '[using] fruit to add natural sweetness instead of sugar on your cereal' which gives the impression that sugar is not a natural food and takes no account of the sugar added to cereal by the manufacturer.

In one web source, aimed at health professionals who want to give advice to 'children who are trying to manage their weight', a low fat, low sugar snack of 'one plain biscuit or one savoury biscuit with a scrape of spread' is advocated without any rationale or evidence about whether and when this is acceptable advice for children or whether children would enjoy such foods.

Messages about starchy foods

Participants in the consumer focus groups reported that there was a lack of messaging promoting the benefits of a diet rich in starchy foods. Such foods were generally viewed by consumers as 'fattening' because of the 'low-carb' diet discourse prevalent in many popular magazines. Many consumers, though not younger individuals, talked about dietary messages to consume more wholegrain foods because of the health benefits. There was consensus among health professionals and representatives from organisations that this message had 'demonised' consumption of white starchy foods. Indeed some consumers considered that white starchy foods such as potatoes were unhealthy and therefore to be avoided.

Overall, most web and print articles analysed advocated eating starchy foods daily and examples of such foods were usually given. For example, '[carbohydrates and starchy foods] include breads, cereals, rice, potatoes, pasta, noodles and couscous. They should form the main part of your diet'. However, not all sources used the term 'starchy foods' to differentiate between types of carbohydrate. Other words e.g. fibre, cereal foods, energy, energy-dense

foods were often used and these were not clearly defined or explained. Sources sometimes gave examples of foods that should be incorporated into the daily diet, e.g. bread, pasta, rice rather than classifying these as a 'type' of food.

The prevailing message was that starchy foods provide energy or fibre, rarely both. For example, in guidance aimed at teenagers one web source said 'try to eat more wholegrain foods to keep your blood sugar levels steady throughout the day'. Guidance about starchy foods for older people overwhelmingly concentrated on avoiding constipation.

Some articles contained no mention of, or rationale for, incorporating starchy foods into the diet.

The format and presentation of web and print articles

It was notable that 'glossy' photos of 'healthy', white, 'slim' models with shiny teeth dominated most sources and these images did little to support the accompanying text. Some materials used 'clip-art' or 'stick figures' rather than photographs and it would be useful to explore how health professionals and consumers perceive these, in comparison to photographs. Very few sources used photographs which were clearly linked to the associated text and one source contained a photograph of a toddler with a bottle of milk though the text stated babies over one year old should only be given drinks in cups. Some photographs, for example of tropical fruits, may alienate consumers who are unable to afford such items on a regular basis though they could, alternatively, be seen as aspirational.

Some sources used outdated formats, patronising text (e.g. in a source aimed at people with learning difficulties) or were not suitable for the audience they were aimed at. The use of a

larger font size and a layout suitable for printing off online resources improved the presentation of some sources.

One printed source, aimed at dietitians, regularly included a 'child nutrition Q&A column' towards the front of the magazine, which is an advertisement from a formula milk company. Whilst it is flagged as an advertisement in small type at the top of the page, this is easy to miss.

Generally, many websites were difficult to navigate and frustrating to use.

Discussion

Three key themes emerged and these may provide the basis for discussion and recommendations for improving the sources of healthy eating advice which health professionals or consumers might access:

- There is often inconsistency within and between print and web sources about guidance on starchy foods and foods high in fat or sugar. This was echoed within the consumer and health professional focus groups.
- Many print and web sources routinely use value-laden terms when delivering healthy eating messages
- The social context within which eating takes place is, on the whole, ignored

The research identified a number of misperceptions and areas where consumers have poor knowledge or understanding about nutrition. Confusion around healthy eating messages is compounded by the interest the media have in new or controversial stories about which foods

are deemed ‘good’ or ‘bad’ within a balanced diet (Ayoob et al. 2002). It is difficult for the long-standing principles of healthy eating to compete with ‘snake oil’ and so-called ‘miracle cures’ but contradictory or poorly conceived messages can lead to distrust. Whilst the author or originator of a web or print article presumably has a message which they wish to convey to the reader, inconsistency within and between sources about starchy foods and foods high in fat or sugar creates a confused ideological position. While some sources might intend to convey nutritional science or core health promotion messages, inconsistent text and images could be perceived by health professionals and consumers as flawed, confused or difficult to follow and ultimately, therefore, will be dismissed (Kelly and Stanner 2003).

As so few of the sources aimed at nurses and general practitioners contained well written articles about healthy eating, this begs the question, what impact does a particular or ‘skewed’ discourse have on their professional practice? Do health professionals have the skills (and manage to apply them) to critically examine nutrition messages before conveying information to their patients (Ayoob et al. 2002)? It also leads us to ask *where else* non-nutrition/dietetic professionals obtain information about healthy eating and whether they draw on popular, non-professional sources. This warrants further investigation.

Whilst the sources aimed at nutritionists and dietitians did, not surprisingly, contain plenty of healthy eating messages, we cannot be sure without further investigation whether these sources are drawn on by their intended audience. The sources which were aimed at consumers very often contained particular ideologies about eating a healthy diet. These were often laden with values about ‘being healthy’ (do not eat too much sugar; make sure you control your weight) with little consideration of the other contextual factors that underpin ‘lifestyle’. Other studies have found that positive messages about diet are better received than negative ones; though impact is slower to materialise from positive messages it is perhaps more effective to take this approach (Verbeke 2008). We cannot be sure whether health

professionals also access consumer sources or what their impact is on consumers or health professionals, but there is a clear need for further evaluation of their influence with a view to making recommendations for improvements.

The overall discourse about limiting foods high in fat or sugar is open to interpretation based on health professional or consumer perceptions about what is 'too' much or 'about right'. This discourse is similar to that found in 'moralised' health promotion messages about breastfeeding – i.e. that behaviours not deemed as compliant are not condoned therefore messages do not make specific recommendations for the 'alternative' behaviour - that is, using breast-milk substitutes (Lee 2007). However, the sources analysed were drawing on current public health guidance about limiting foods high in fat or sugar as it is not possible to determine how much of these foods 'should' be eaten by individual men, women or children. It would be useful to explore, however, whether health professionals find this approach helpful in relation to delivering advice about incorporating foods high in fat or sugar into patients' diets, particularly given that other studies have found that some patients dislike such general advice (McClinchy et al. 2011). An alternative approach might be to consider advising consumers what a 'small amount' of foods high in fat or sugar would 'look' like across a typical week. The eatwell week resource, for example (see http://www.foodbase.org.uk/results.php?f_report_id=712), suggests the number of portions of foods high in fat or sugar a woman (with a ~2000 kcal energy requirement) could eat each week and this advice could be extended to other individuals.

Overall we were struck by how little healthy eating advice was contextualised in the sources analysed. For example, few materials analysed discussed choosing food that tastes good or acknowledged that health is just one aspect of choosing a varied diet (Saltonstall 1993; Keane 1997; Wills 2011; Wills et al. 2011). Many sources recommend that foods high in fat or sugar are eaten with a meal rather than as a snack which takes little account of the socio-cultural

factors embedded in ‘snack choices’, particularly for children and young people (Gatenby 1997; Lake et al. 2009). Written texts ought to consider and draw on the available social science evidence about the socio-cultural factors which underpin eating habits (Wills et al. 2008; Stead et al. 2011). Integrating such evidence within sources would shift the discourse and support health professionals to give meaningful advice about consuming a healthy diet. It is important to consider how nutrition advice is perceived, received and used by the reader, without weakening the scientific argument. One way forward might be to contextualise the evidence provided by including more ‘real life’ examples or case studies to illustrate how consumers have taken healthy eating messages on board in ‘the real world’ (Dahlstrom and Ho 2012). This at least gives the reader, whether a health professional or consumer, the opportunity to consider the nutritional science/messages alongside the broader social narrative. This would represent a significant development in health promotion and science communication generally as little progress has been made in relation to a wide range of health-related behaviours, not just the promotion of a healthy diet (Rychetnik et al. 2012).

There are significant barriers to improving the Scottish diet and more effective messaging alone will not solve the problem. Further work with the media to encourage more accurate and responsible coverage of food and diet stories may be a useful step forward, but there is also a need for consistent and accurate messaging across *all* sources and platforms of nutrition information. Some of the confusion and misconceptions around starchy foods and high fat and/or sugar foods found in the focus groups reported here may be attributable to messages from supposedly trustworthy and responsible sources of nutrition information, rather than the fault of inflammatory and inaccurate information from media reporting of diet and health. There is considerable scope for improving nutrition messaging in Scotland.

Limitations

As the study was conducted over a short period of time the scope of the analysis was limited to exploring select sources of nutrition messaging. The analysis excluded other forms of healthy eating advice aimed at health professionals, like books and leaflets. It also excluded popular sources which might contain advice about healthy eating, like women's magazines or popular web forums aimed at mothers, though we acknowledge that health professionals might access and draw on such resources. Indeed, some of the health professionals we discussed the study with at its outset indicated that they or their colleagues *did* use such sources therefore we would recommend that further research be conducted to assess the healthy eating messages they contain and their influence on health professionals and consumers.

With regards to the focus group research, the work was limited in its scope, focussing mainly on starchy foods and foods high in fat and/or sugar. It is possible that examples of 'best practice' in nutrition messaging were missed. It is also true that the focus groups included a small number and a narrow range of non-nutrition health professionals. It may be useful to expand the research to include others, such as GPs, other specialist and non-specialist nurses and professionals with an interest in public health nutrition including those who work in a community setting.

The two studies drawn on here were conducted simultaneously but separately thereby limiting the ways in which findings from one could inform the other.

Conclusion

This study has highlighted that dietitians and other nutrition health professionals are concerned with the quality of nutrition information available to non-nutrition professionals

and consumers and that many consumers might misunderstand healthy eating messages, believing they are eating healthily when they are perhaps not. There is considerable scope for improving the format and presentation of healthy eating advice aimed at health professionals and consumers. Websites and publications which were unequivocal in their delivery of healthy eating advice were relatively rare. Most sources delivered messages which were inconsistent, confusing and value-laden, setting up ideologies about healthy eating that are unlikely to be compatible with policy objectives. The extent of the influence of these sources on consumers and health professionals needs to be further evaluated. Advice provided by other sources of information, including popular magazines/websites, also need to be examined. It may also be advisable for providers of nutrition information to work together to ensure that the information provided is clear and consistent across platforms.

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Appendix 1 – Inclusion and exclusion criteria for the selection of print and web sources for the discourse analysis

- Restrict the analysis to the same sections, when available, within each source, rather than sampling a wider range of sections across the sources. This was because it was felt that sources would use a similar 'style' across their publication/website.
    - The sections which were analysed, if available, were: healthy eating; snacking; packed lunches; breakfast; weight loss; weaning; children; teenagers; older people
    - The topic specific sections were chosen because snacking, packed lunches and breakfast are times when advice about starchy foods and foods high in fat or sugar might be particularly relevant; the population groups were selected because, generally, there is more advice available aimed at them/those advising them than for 'adults'
    - Other sections were also analysed if they contained information relevant to the study's objectives
- Include sources published from October 2009 onwards
- Include information aimed at consumers or health professionals
- Include information aimed at a UK, Scotland or Northern Ireland audience
- Exclude information aimed at caterers
- Exclude transient online items, like those contained on online news or website home pages
- Exclude websites/resources relating to specific, clinical conditions (e.g. diabetes, stroke).

Appendix 2: Sources and sections included in the analysis

Source	**Section**	**Sub-section**
British Dietetic Association http://www.bda.uk.com/	Food facts	Healthy eating and lifestyle: Breakfast Christmas – eat, drink and be healthy. Weight loss, detox and health claims: Detox diets. Glycaemic index Babies, children and pregnancy: Children – diet, behaviour and learning. Children – healthy eating.
British Nutrition Foundation** http://www.nutrition.org.uk/	Healthy Living	Healthy eating: Healthy Eating: A healthy varied diet Healthy packed lunches Healthy snacking
NHS Inform (Scotland) http://www.nhsinform.co.uk	Common questions: Food and diet* Target groups*	Keeping your weight healthy: Why is gradual weight loss better than a crash diet? Salt and sugar, fibre and fats: Why is fibre important? Healthy meals and healthy snacking: What is a healthy

		balanced diet? Children and healthy eating: What can I do if my child is overweight? How many calories does a child of 7 – 10 need? Eating and energy and exercise: What is the glycaemic index? Parents
Network Health Dietitian (NHD) magazine	7 issues randomly selected from Oct 2009-current	All articles analysed which had relevance to the research questions
GP Pulse magazine (http://www.pulsetoday.co.uk)	Online articles searched for keywords relating to research questions***	All articles analysed which had relevance to the research questions
Community Practitioner Magazine (monthly)	50% of issues published since Oct 2009 were randomly selected	All articles analysed which had relevance to the research questions
Nursing Standard (weekly)	90 issues searched from 2010-11 for articles with keywords relating to research questions***	All articles analysed which had relevance to the research questions

Practice Nurse Journal (monthly)	41 issues from 2010-11 searched for articles with keywords relating to research questions***	All articles analysed which had relevance to the research questions
NDR-UK http://www.ndr-uk.org/	Target populations	Healthy lifestyle: Primary age children Healthy lifestyle: Teenagers/Fuel to Go Meal suggestions for children trying to lose weight Older people: do you have a small appetite? Older people: Staying healthy for the over 50s General: Knowing your carbohydrates Parents: Food Labels
Ready Steady Baby ** http://www.readysteadybaby.org.uk/	Your pregnancy*	Looking after yourself during pregnancy/Eating well Growing together/looking after your baby/weaning your baby
Ready Steady Toddler http://www.readysteadytoddler.org.uk	Everyday routines	Food and diet

Fun First Foods http://www.healthscotland.com/documents/303.aspx	Whole booklet	
Public Health Agency NI - site for healthy eating http://enjoyhealthyeating.info/home	Nutrition*	Children aged 1-5 (Sections on older children not analysed as they were very similar to the sections on young children) Adults Older people
Safe Food www.safefood.eu 'Consumer' Section	Healthy living* Life stages*	Eating well Healthy balanced diet Portion sizes Weaning Toddlers School children Teens Older adults
Caroline Walker Trust http://www.cwt.org.uk/	Eating well resources	Children under the age of 5 School aged children Older adults

We have not included in this table the sources which were excluded from the analyses. These are, however, available in the full report (see Note 2).

* Indicates the source is aimed at consumers rather than health professionals

** These sources were analysed by two members of the team as a check on consistency of the overall analytical approach

*** Search terms: ‘healthy eating’; ‘starchy foods’; ‘fat’; ‘sugar’.

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[1] See http://www.food.gov.uk/science/research/devolvedadmins/scotlandresearch/scotlandresearch/ScotlandProjectList/fs244029/

[2] See http://www.food.gov.uk/science/research/devolvedadmins/scotlandresearch/scotlandresearch/ScotlandProjectList/fs244029_2/