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Mediating the spaces of diet and health: A critical analysis of reporting on nutrition and colorectal cancer in the UK.

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Abstract

The media are one of the main arenas in which nutrition information is framed and developed. Research has shown a predominantly individualistic framing of diet-related health issues such as obesity, type-2 diabetes and coronary heart disease in international media coverage. These issues are framed as personal, 'lifestyle' issues rather than requiring policy or structural change. In addition, research has shown a tendency in nutrition research and media coverage of it, to emphasize individual ingredients or components more than overall diet. The media have a tendency to report diet related research simplistically, often without contextualization. Taking a case study approach, this paper analyses UK news media coverage and framing of British Medical Journal (BMJ) published research into dietary fibre and bowel cancer risk. I investigate how the health issue fibre and bowel cancer is framed and dissect the process of mediation (from press release to mass media to local media), analysing the shifting 'geographies of responsibility' that result. This paper argues that media coverage of research into diet and bowel cancer can be explained by the technologies, conventions and routines of media representation. Key gatekeepers were found to have an important role in framing the information that was reported. Taking a critical approach, this paper argues that like obesity, type 2 diabetes and coronary heart disease, coverage of nutritional means of preventing bowel cancer is set predominantly in the 'lifestyle' frame, often laying responsibility for increasing dietary fibre at the door of the individual rather than looking at broader social, economic, or political drivers of dietary change.

1. Introduction

Colorectal or bowel cancer is the second most common cause of cancer death in the UK and the fourth most common cancer. Over 40,000 men and women are diagnosed with it every year (Bowel Cancer UK, 2016). Since at least the 1990s, a north-south divide in bowel cancer incidence has existed in Britain. The highest incidence rates for men are in areas of Scotland, Northern Ireland and the north of England. However, for women a clear divide is much less evident, with many parts of England experiencing high incidence rates, for example areas in the east and south-west. (Cancer Research UK, 2016). There is a small association between deprivation and bowel cancer incidence for men (incidence rates are 13% higher for men living in the most deprived areas) but there is no evidence of such an association for women (Cancer Research UK, 2016). This raises issues of geographically- and gender-related health inequalities.

A large body of evidence suggests a strong link between diet and the risk of developing bowel cancer (Sandhu et al 2001, Bingham et al, 2003, Parkin 2011, World Cancer Research Fund 2011). Since the mass

media have long been identified as one of the key public arenas in which social problems are framed and grow (Hilgartner and Bosk, 1988) and it is well recognised that the media is a vital source of contemporary information on nutrition and health (Fernandez-Celemin and Jung 2006), this paper asks three key research questions: How is nutrition discourse about diet and bowel cancer mediated by the UK press?; how does UK press coverage frame nutrition messages such as responsibility for diet?; and can this framing be explained by media routines and conventions? In addition the work of health geographers is drawn on to explore the way nutritional research is reported in the UK press; the developments in health geography are viewed from a food policy perspective.

1.1 Food Policy, Geography and Health Inequalities.

Food policy scholars have argued for a move away from healthcare to prevention as the primary focus of public health (Lang and Rayner, 2012). This builds on a larger debate in public health about the importance of addressing the social determinants of health and health inequalities (McKeown, 1976, Szreter, 2002). Food policy's call is echoed by health geographers who have attempted to move away from a purely medical geography towards one that embraces a wider notion of health (Kearns, 1993). Health geographers contend that the 'manifold geographies of public health' deserve greater attention within a 'post-medical' geography – that is to say a geography that focuses on health deserves more attention than one that focuses on the 'medical' (Parr, 2002, Herrick, 2007). Both these fields, food policy and health geography, argue that health is more than the absence of disease and in the case of food policy, suggest that the vital role nutrition plays in prevention is often overlooked. Indeed, although it is an established branch of science, nutrition still suffers from relatively low engagement with mainstream public policy (Lang et al 2009). As in public health, there could be seen to be 'manifold geographies of nutrition'; a personalized approach is insufficient since nutrition is also dependent on food production, cultural background, economics as well as environmental and political issues. This chimes with a re-engagement among health geographers with the idea that 'place' and 'context' matter for health as well as individual characteristics and behaviours (Cummins et al 2007) and can be seen as part of a 'new public health' movement that stemmed from work in the 1970s and was particularly embraced by health geographers in the early 1990s (Kearns, 1993; Brown and Duncan, 2002; Cummins et al 2007). This 'new' public health recognised the social dimensions of health as well as the biomedical and health geographers sought to identify the influence of bodily practices, space and place on human health (Petersen and Lupton, 1996, Brown and Duncan, 2002). However within this context and since policymakers have adopted new strategies to take into account the importance of place in public health policy (for example in an attempt to tackle what's become known as the 'obesogenic environment') a body of work has emerged in critical health geography offering a more nuanced view. Here scholars warn of uncertainty in the evidence around diet and physical environment (Townshend and Lake, 2009) as well as raising concerns that the problematisation of 'unhealthy' bodies can contribute to fat shaming and prejudice (Mansfield, 2008, Guthman 2008, Evans et al, 2012, Hayes-Conroy and Hayes-Conroy, 2013).

Evans et al (2012) argue that an increased ecological perspective can lead to generalised assumptions and stereotypes of individuals and identities in urban design and public health policies. They call for a more holistic notion of health within planning practice (Evans et al, 2012). Similarly, Cummins et al (2007) warn against assuming that space and place 'exerts an effect on an individual's health that is independent of the individual's own characteristics' (Cummins et al, 2007, p.1833). They take a relational approach, exploring the idea that 'conventional' ideas of place and space which are physical locations with geographical boundaries can be more helpfully viewed relationally by thinking of places as nodes within networks rather than 'discrete and autonomous bounded spatial units' (Cummins et al 2007 p.1827).

1.2 Nutrition and Geographies of Responsibility

Massey (2004) pushed the idea of a relational thinking of space/place, coining the term 'geographies of responsibility' to explore the relationship between identity and responsibility and thinking of 'space/place in terms of flows and (dis)connectivities rather than in terms only of territories' (Massey 2004, p.11). This issue of responsibility is at the heart of current debates around public health nutrition in the UK. For example, while there is a large body of scientific evidence suggesting a strong link between diet and the risk of developing bowel cancer (Bingham et al, 2003, Sandhu et al 2001, Parkin 2011, World Cancer Research Fund 2011), who should take responsibility for diet has been the subject of debate. While, as outlined above, the disciplines of food policy and health geography have argued that diet is socially, geographically and culturally constructed (Lang et al 2009, Smyth, 2007), the current Conservative and previous Conservative-led coalition government have adopted a neo-liberal approach in which the Government takes less responsibility for public health while individuals, notionally helped by industry, take more (Panjwani and Caraher, 2014). This has impacted on UK government policy on cancer prevention and diet's role in it, which is the core focus of this paper.

The UK government advises that a diet high in fibre and low in red and processed meat may reduce bowel cancer risk (NHS Choices, 2014) as part of a wider recognition that 'up to half of all cancers could be prevented by changes in lifestyle behaviours' (Department of Health, 2011). This belies the inherent individualized approach to diet and cancer prevention in current government policy. Responsibility for cancer prevention lies with Public Health England (PHE), which came into being in April 2013 as part of the then coalition government's Health and Social Care Bill. A major focus of PHE is a 'partnership' with industry, NGOs, the voluntary sector and local government to 'help people make healthier choices' (Department of Health, 2011, p36, 4.9) – the implication being that national government bears less responsibility for our health while individuals, in partnership with industry bear most responsibility. This approach, particularly the Public Health Responsibility Deal has been widely criticised by food policy experts for its reliance on corporate responsibility (Lang and Rayner, 2012, Hastings, 2012) that is voluntary and unreasonably expects big business to prioritise public health interests above its own (Panjwani and Caraher 2014). Some see this as part of a wider trend moving to preserve freedom of

choice within a more supportive system of government in an attempt to use libertarian paternalism to resolve conflict between the interventionist state and the liberal market (Pykett et al 2011). This has manifested itself not only in the Responsibility Deal but in other 'nudge' strategies, in which the public are encouraged to adopt healthier behaviours by government 'without forbidding any options or significantly changing their economic incentives' (Thaler and Sunstein, 2008, p.6). Successive UK governments have embraced the 'nudge' theory, for example the Labour government's Change4Life programme (NHS, 2015) which they introduced in 2009 and which continued under both the Conservative/Liberal Democrat Coalition government and the current Conservative government (NHS 2015). However, the prevailing and continuing focus on individual responsibility is seen by some as an unhelpful approach, which misses an opportunity for a more nuanced account of collective responsibility (Colls and Evans, 2008, Guthman and DuPuis, 2006). Colls and Evans (2008) draw on Massey's (2004) *Geographies of Responsibility* to unpick the placing of responsibility in domestic food shopping and identify an 'embodied geography of responsible relations' (Colls and Evans, 2008, p.617) in terms of where responsibility for children's diets is placed, variously shifting between supermarkets, parents, children and the government. Similarly Meah (2014) uses Massey's framings of responsibility and that of 'victim blaming' in a study on domestic food safety practices. Drawing on work by Jackson et al (2010) which looked at geographies of responsibility in the chicken supply chain, Meah (2014) sees a tendency in the scientific community to prioritise individuals' responsibility for food safety, this within a wider context of Beck's (1992) 'risk distributing' society where all participants seek to pass responsibility of risk on to others. I seek to extend this argument by applying this concept of geographies of responsibility to the way responsibility for diet is placed and framed in newspaper coverage of nutrition research into bowel cancer and by examining whether the UK news media reinforces an individualistic approach in its coverage of diet-related cancer prevention research. This has already been shown to be the case for obesity, type-2 diabetes and coronary heart disease, where media coverage has been shown to focus responsibility for these diet-related conditions disproportionately on the individual rather than framing the issue as the responsibility of the state, industry or civil society (Lawrence, 2004, Hellyer and Haddock-Fraser 2011, Hilton et al 2012). Similarly, research into media coverage of cancer also identified frequent and overt individualistic framing of cancer as opposed to offering a community perspective (Clarke and Everest, 2006, Clarke and van Amerom 2008). Both Entwistle and Hancock-Beaulieu (1992) and Clarke and van Amerom (2008) observed an absence of references to the social determinants of health (such as income, education level, ethnicity, early life experiences, employment and working conditions) and found that media coverage focused instead on an individualistic approach to disease.

Lang et al (2009) argue that nutrition is not given the importance in public policy it deserves not only because it is often seen as a personal and private individual matter in which no other body has the moral right to intervene, but also because it is often criticised for producing contradictory research. This is reflected in newspaper reporting where a high degree of public cynicism about media coverage of

nutrition issues has been found (Lupton and Chapman, 1995) as well as an undermining of nutrition messages in reader-generated comments published below online newspaper articles (Regan et al 2014). These latter have contributed to what McQuail (2013) calls a convergence between citizens and the mass media and can provide a platform for what Hayes-Conroy and Hayes-Conroy (2013) call 'diverse nutritions', considering alternatives to the hegemonic nutrition science. In addition, as Greenhough (2010) points out, they can provide space for citizens themselves to resist what she calls 'dominant state-led versions of biological citizenship' (Greenhough, 2010, p.158) in which (un)healthy bodies are made visible, individualized and responsibilized. Dixon (2009) sees this as a classic confrontation between 'technical and lifeworld rationality' (Dixon, 2009, p.321).

Nutritional research as a biological science often focuses its studies on individual ingredients, components or foodstuffs. This may influence the tendency of the media to report diet related research simplistically, often without contextualisation (Goldacre, 2007). This means that food items are often taken out of context - overall diet is less likely to be mentioned. This reflects a trend (Scrinis 2012, Dixon, 2009) in which 'real food' (as coined by Pollan, 2008) is replaced by 'nutrients'. Scrinis calls this 'nutritional reductionism', while Dixon terms it 'nutritionalisation'. Both chart the recent history of nutrition's development as a science. In nutritional reductionism functional foods, individual ingredients or nutritional elements are the focus of research and subsequently dietary advice. This seems to be particularly prevalent in the media's coverage of research relating to diet's role in the prevention of cancer – of course the media may be merely reporting studies produced by the scientific community, commissioned by governments, charities, research organisations who are themselves prone to this tendency to view food as isolated nutrients, in a similar way to the media's reflection of a research bias towards breast cancer research outlined by Lewison et al (2008).

In terms of more general trends in cancer coverage, perhaps due to its complex cultural and psychological place in both history and society (Sontag, 1991, Mukherjee, 2011) the media could be said to be keen to tap into a morbid fascination for cancer. Research on the mediatisation of cancer has shown frequent use of military and sporting analogies (Sontag 1991, Clarke and Everest, 2006, Seale 2001), use of celebrities with cancer to drive narrative (Chapman et al 2005, Hilton et al 2010) and an emphasis on fear of cancer (Clarke and Everest 2006). Lewison et al (2008) showed that more than a third of cancer research featured on the BBC website mentioned breast cancer (compared to a disease burden of 13%) with the next most covered cancer sites being lung and prostate cancer – noting that lung cancer was much less covered than its disease burden of almost 20% would have suggested. In the case of bowel cancer the media have been shown to shy away from covering this topic, perhaps due to prurience about discussing bowels or bowel cancer symptoms, with bowel cancer receiving disproportionate coverage compared to its disease burden (Gerlach et al, 1997, Lewison et al 2008, MacKenzie et al 2010, Williamson et al, 2011, Konfortion et al 2014). A key question for this current

paper is to further explore the press coverage of bowel cancer by examining how nutrition discourse about bowel cancer is mediated by the UK press.

1.3 Media Ecology as an approach in Health Geography

My approach in this case study is to follow the history, or information flow of scientific research into bowel cancer and dietary fibre as it moves from research, to press release, to press agency, to media outlet and onward to social media. This is in an attempt to broaden my research, using 'media ecology' techniques (Strate, 2004, Scolari, 2012, Lum, 2009), in a way that commonly used media methodologies such as content analysis do not allow. Content analysis is a systematic and often quantitative technique frequently used to study media coverage by seeking to objectively measure media coverage and code its content in order to track themes and discourses. It has been argued that quantitative content analysis alone cannot make inferences about producers' intent or audiences' interpretation (Neuendorff, 2002) since media texts are open to varied interpretations. In addition some qualitative researchers have rejected quantitative content analysis' positivist approach arguing that measurement of media coverage in itself is not an indicator of social impact (Berger and Luckmann, 1967). The intention in the current research is to take greater account of the context in which reporting takes place and the actors involved in the media production process, in order to explore the extent to which media framing can be explained by media routines and conventions. This media ecology approach is particularly apt given the health geography perspective of this paper. My argument here is that framing occurs not only in the press coverage of nutrition research but during the media production processes that surround it. The nutrition research itself is constructed in a particular frame, as is the press release, the quotes used within the press release and the press agency copy that is constructed from it and propagated by successive news outlets. A media ecology approach can unpick the complex framing and re-framing of nutrition research in a way that reveals the shifting geographies of responsibility for public health nutrition. Since the 1960s researchers in the emerging field of media ecology have tried to broaden media research (Strate, 2004, Scolari, 2012, Lum, 2009) by looking at the influence of both evolving technology (McLuhan, 1964) as well as the production processes that underpin and shape mass media reporting (Altheide and Schneider, 2013). This approach has been effectively adopted by geographers in the analysis of celebrities' involvement in climate change reporting (Boykoff and Goodman, 2009, Goodman, 2013) who have demonstrated that through 'multi-farious and interacting factors' politicized celebrities operate within a system characterized 'as a diverse field of interconnected factors and forces that importantly circulate in and amongst each other in and on the media landscape' (Boykoff and Goodman, 2009, p397).

There are a number of media theories that can help understand journalistic norms and processes.

Research on information flow and “gatekeeping” in the media has evolved from initial studies which showed the power of gatekeepers within the media production process – early studies assessed the way journalists chose the stories that appeared in their newspapers (White, 1950) leading later to a more complex understanding of the politics of information flow with work by Shoemaker (1991), Schlesinger and Tumber (1994) and others. These studies showed that there are many key internal and external actors affecting information flow, for example media managers and editors, media sources such as PR companies as well as audiences who have increasing opportunities to comment on media coverage. Entwistle (1995) found that the working practices and preconceptions of journalists played a crucial part in the selection of stories appearing in their newspapers. The journalists relied on a few journals as sources of medical research news, so the research that appeared in these journals largely determined the pool of information from which stories were selected. Because of changes in news production processes (many due to technological change, for example the use of the internet and emails) research has shown that time in the newsroom is shorter and resources are stretched (Lewis et al 2008). Journalists have become increasingly reliant on press releases to write their copy (Bartlett et al 2002, Lewis et al 2008) and this has caused concern about the independence of the British media (Lewis et al 2008, Davies 2009, Williams et al 2009).

The newsroom has a set of norms that it adheres to. Scholars have long known that there is no correlation between press coverage of diseases and their disease burden (Kristiansen 1983, Harrabin et al 2003). Macintyre et al (1998) found, when studying the relative coverage given to the links between diet and coronary heart disease at the height of the BSE scare, food scares such as BSE and salmonella got much more coverage in news items and news bulletins and many more headlines while articles on a more widespread dietary problem like CHD got generally less coverage and appeared more frequently in magazines or features pages. Macintyre et al (1998) used the theory of news values to explain this imbalance. News values, evolving from Galtung and Ruge’s (1965) study into foreign news, but developing with work by Schlesinger (1987) and Harcup and O’Neill (2001), create a hierarchy of news values which, if satisfied, make an event or subject more likely to receive news coverage – for example if an event is about a celebrity, it is more likely to receive news coverage. In the context of nutrition and geographies of health these media theories are important because they highlight the power of media sources and their struggle to frame information in a particular way. This can impact the placing of responsibility for nutrition – key gatekeepers present ‘healthy diets’ in different ways; whether it be emphasizing single nutrients over others as so-called ‘superfoods’ (Dixon, 2009) or headlining individual responsibility for diet over a more nuanced societal approach (Guthman and Dupuis, 2006).

Little research has been carried out looking at media coverage of the relationship between diet and bowel cancer. However, as outlined in this introduction, research has shown a tendency in the UK mass media to personalize diet and health and minimize reporting of social or geographical aspects of health

reporting. In addition media coverage has been shown to focus on individual ingredients or nutrients rather than discussing overall diet in a way that can simplify the complexities of nutrition research. This paper takes as a case study UK news media coverage and framing of a British Medical Journal (BMJ) published research paper on dietary fibre and bowel cancer risk (Aune et al, 2011). The three main questions it seeks to answer are: How is nutrition discourse about diet and bowel cancer mediated by the UK press?; how does UK press coverage frame nutrition messages such as responsibility for diet?; and can this framing be explained by media routines and conventions? The process of mediation (from press release, to mass media, to local media and on to social media) is dissected and the shifting 'geographies of responsibility' (Massey, 2004) that result are analysed.

2. Doing a media ecology

Media ecology can reveal both the content and the context of media reporting to illuminate questions posed by media theories on news values and gatekeeping. Therefore this paper takes a single-case study approach (Yin, 2009), and uses media ecology to examine complex media interactions in the case of newspaper coverage of research on bowel cancer and dietary fibre published in the BMJ in 2011. Yin (2009, p.48) describes a rationale for a single-case study design as the 'representative' or 'typical' case, saying the objective is to 'capture the circumstances and conditions of an everyday or commonplace situation'. The intention with this exploratory case study was to capture the media coverage of a research paper on nutrition, to map the terrain for future research and make a contribution by linking health geography, food policy and media ecology to better understand the impact media coverage of nutrition related cancer research could have on food policy.

In 2011 the BMJ published a research paper on the role of dietary fibre in the development of bowel cancer (Aune et al, 2011). A copy of the academic study (Aune et al, 2011) was obtained via City University library online. The emailed BMJ press release for the study was obtained from BMJ press releases for journalists (BMJ, 2011). The online press release was obtained from BMJ online. The study was then read and its findings were outlined, the press release was analysed. These documents were the core documents for this study, the reference point. However it is important to note that this study/paper is not a review of the evidence as presented by Aune et al (2011) but of the media responses to the paper.

From these two core documents, the study itself and the press release, UK print and online mass media responses to them were tracked and analysed. This was done using times provided by the news database service Nexis UK and stated times of online press releases and coverage. A chronological view of the coverage was formulated. Hard copies of newspapers, a search on Nexis UK (a database providing content from newspapers, newswires, magazines, journals and web-based publications) and an online search of news media revealed which national, local and regional UK newspapers reported the study.

The press releases, news agency releases and news coverage (national, regional and local) were analysed to assess the pathway of the information, the main gatekeepers of the information and how the information was framed and/or changed at each stage of the pathway. This included an analysis of readers' comments in response to online articles, published below the article on newspaper websites. A coding frame was developed to assess whether 'salient points' from the study were outlined (see Appendix A). These were formulated using guidelines on science and health reporting developed by the Science Media Centre (Science Media Centre, 2012), Basu and Hogard's (2008) Tabloid Analysis Tool and Hirasawa et al's (2011) measures to evaluate health information on the internet. The media texts were analysed along with the reader comments to assess the framing of messages at key stages of the media production process. Efforts were made to trace all UK press coverage of the Aune et al (2011) study using both hard copies of newspapers and the news database Nexis. However news databases such as Nexis give an indication of coverage but do not provide exhaustive records of media coverage and this should be taken into account when reading the results. Newspapers and online media only were used in this analysis, other media may be different.

3. Follow the science story: findings

The core study was published in the BMJ in November 2011 (Aune et al, 2011). The study, a systematic review and meta-analysis, aimed to investigate the link between dietary fibre, particularly wholegrain intake and the development of cancer. To do so it combined and analysed the results of all available prospective observational studies on the subject – 25 studies involving almost 2 million participants. It showed a clear gradient in risk associated with the amount of dietary fibre – each 10g per day increase in intake of total dietary fibre and cereal fibre was associated with a 10% reduction in risk of colorectal cancer. The basic position of the paper is that previous research has not been convincing on the protection offered by intake of dietary fibre and whole grains against colorectal cancer, nor has it been clear whether specific types of fibre are associated with the risk of colorectal cancer. The authors are eminent scientists in their field and while they acknowledge gaps in the evidence they assert in a summary in the paper itself that their research shows that: (1) intakes of dietary fibre, cereal fibre and whole grains are associated with linear decreases in the risk of colorectal cancer; (2) evidence of an association between intake of fruit, vegetable or legume fibre and risk of colorectal cancer is lacking and (3) intake of dietary fibre, particularly cereal fibre and whole grains was associated with a small reduction in the risk of colorectal cancer.

A press release about the study was issued by The BMJ (BMJ, 2011). Press releases are key documents for journalists – the literature shows that without a press release, research is less likely to receive press coverage (Bartlett et al, 2002, Lewis et al 2008). This press release was first emailed from the BMJ at 16:33 on the 9 November 2011, noting an embargo (a kind of gentlemen's agreement among the press that they will not report the information contained within the press release until after this time) of 2330

on the 10 November 2011. Another, online press release about the study was posted on the BMJ website at 1410 on 10 November (BMJ, 2011). Future News Media Planner (a service run by the company Precise, aimed at alerting communications and PR teams and journalists in the press and broadcast news about forthcoming events) released information from the BMJ about the study on the 10 November, noting the 23.30 embargo. (Future News, 2011). The BBC Online Health page reported the study at 0121 on the 11 November (BBC News 2011). Press Association's Mediapoint (a news wire service which delivers PA's news stories to subscribers and is routinely used by newspapers and other journalists) reported the story at 0246 on the 11 November. Jane Kirby, PA's Health Correspondent filed a report (454 words) on the study (Kirby, 2011). This PA report was influential as it formed the basis of much of the other media coverage (see Fig.1).

In terms of UK national newspapers, the study was reported in The Daily Mail (Daily Mail 2011), The Sun (The Sun 2011), The Daily Telegraph (The Daily Telegraph, 2011) and The Guardian (The Guardian, 2011). The Independent and The Daily Express covered the study on the same day on their websites { [HYPERLINK "http://www.independent.co.uk"](http://www.independent.co.uk) } { [HYPERLINK "http://www.express.co.uk"](http://www.express.co.uk) } but not in the newspaper itself. The Daily Mail, The Daily Telegraph and the Guardian also put a version of their report on their website. The Times did not report the study on this day, but did a few days later, in its Diet and Fitness section in the newspaper and on its website www.thetimes.co.uk on Tuesday 15 November 2011 in a feature by Amanda Ursell (a nutritionist and writer with weekly columns in The Times and The Sun) (Ursell, 2011). Of the online newspapers, The Independent online, The Telegraph online and the Mail Online published reader-generated comments beneath the main body of the article. The Mail Online published the most reader-generated comments (67) while the Telegraph online published 9 reader-generated comments and the Independent online published 3 reader-generated comments.

The Nexis news database search also reveals that several local and regional newspapers covered this study; all are based in the north of England or Scotland: The Liverpool Daily Echo (Liverpool Daily Echo, 2011), Middlesbrough Evening Gazette (Middlesbrough Evening Gazette, 2011), Glasgow Evening Times (Glasgow Evening Times, 2011) and Liverpool Daily Post (Liverpool Daily Post, 2011) all reported it on the 11th November. The Newcastle Evening Chronicle (Young, 2011) reported the study a few days later on Monday 14 November 2011. The Scunthorpe Telegraph (Scunthorpe Telegraph, 2011) reported the study still later on Thursday 17 November 2011. The timeline for this story is short – after the embargo is lifted the main UK coverage happens within 24 hours.

The Press Association (PA) report (Kirby, 2011) was directly taken by the Independent for its website giving Kirby's byline (the name and sometimes position of the writer of the story) and quoting PA as the

source, although it did not pick up the story in the newspaper itself. The Daily Express also used the PA report on its website although without crediting PA or Jane Kirby. The Guardian's story also quotes PA as the source but without a byline. It reprints the first 108 words of PA's report. It is not possible within the confines of this case study to know how the other three newspapers covering the story (The Daily Mail, The Daily Telegraph and The Sun) obtained their information – whether it was directly from PA or from the BMJ press release, from the BMJ paper itself or from another source. Analysing the text of their reports, none of these three papers appear to have taken the text of the story directly from the press release, the BBC online report or PA's report. However analysing the text of the six local and regional newspaper reports (Liverpool Daily Echo, Middlesbrough Evening Gazette, Glasgow Evening Times, Liverpool Daily Post, Newcastle Evening Chronicle and The Scunthorpe Telegraph) reveals all six of these reports were, to a greater or lesser degree, cut and pasted directly from the Press Association copy (see table 1). However the Press Association is not credited by any of them, indeed a different byline appears against one of the stories.

Table 1. Coverage by local and regional papers

Newspaper	Number of words (excluding headline)	Proportion taken from PA report (%)
Glasgow Evening Times	224	98.21%
Liverpool Daily Echo	58	100%
Liverpool Daily Post	65	100%
Middlesbrough Evening Gazette	54	100%
Newcastle Evening Chronicle	239	100%
Scunthorpe Telegraph	279	100%

Intra-media and inter-media agenda-setting, in which media outlets report a story that has previously been covered by another media outlet, has been shown to be an important factor in understanding the way media define reality (McCombs and Shaw 1972, Golan, 2006, Djerf-Pierre 2012). Figure 1 shows the complex news pathway of this study as it is interpreted first by the BMJ press office, by the press agency Press Association, by national UK media outlets, regional media outlets, national organisations, international press and social media.



Fig. 1. News pathway of the core study

As outlined in the introduction, Clarke and Everest (2006) identify three influential emergent ‘frames’ in cancer and health reporting. The dominant is the ‘medical frame’ which emphasizes medical treatment rather than prevention, the next most frequently used is the ‘lifestyle frame’ in which disease is the consequence of individual behaviours and the least frequently used is the ‘political/economy frame’ which looks at disease as a consequence of social policies and inequalities. The BMJ press release and Aune et al’s study mention the public health implications of the study in terms of both the barriers to increasing intake of whole grains and public health recommendations to increase whole grain intake:

‘The results of the new bmj.com study now provide further support for public health recommendations to increase fibre intake, particularly cereal fibre and whole grains, to help prevent colorectal cancer.’ (BMJ, 2011, p.1)

‘...research is still needed to explain the biological mechanisms responsible for the beneficial effects of these foods in detail and to study barriers to increasing the intake of wholegrain products.’ (BMJ, 2011, p.1)

This perspective was not, however, included in most of the media coverage. For example, The Press Association (Kirby 2011) includes quotes from the WCRF and Bowel Cancer UK that emphasize individual responsibility for increasing dietary fibre intake – as in a quote from Deborah Alsina, chief executive of Bowel Cancer UK;

“‘This valuable study provides further evidence that it is possible to stack the odds against bowel cancer. Simple changes to your diet and lifestyle can make a huge difference. Changes such as increasing your intake of fibre can genuinely help you feel healthier and reduce your risk of the disease. This is

great news because it's achievable by most people and could have a big impact on the nation's health.'" (Kirby, 2011)

and a quote from Dr Rachel Thompson of the WCRF:

"This adds further weight to our recommendation that people who want to reduce their risk of cancer should eat more of a variety of vegetables, fruits, whole grains and pulses.'" (Kirby, 2011)

The reports in the main fail to address aspects of health geography – there is no sense of place in the coverage despite the differences in bowel cancer incidence between areas of the UK (Cancer Research UK, 2014). The majority of the coverage frames diet as the responsibility of the individual, rather than providing a more complex picture of social, environmental and economic responsibilities interacting with individual responsibilities, which is widely recognized among health professionals (see for example Dahlgren and Whitehead 1991). There are two reports that do mention societal, environmental or geographical aspects of this study. Both of these do so at the end of their reports and have already also mentioned individual responsibility for health. The Daily Telegraph (Daily Telegraph, 2011) raises the issue of levels of fibre in most foods:

'Most foods only contain a little fibre: muesli, for instance, only contains about 3g per 50g serving' (Daily Telegraph, 2011)

without, however investigating the political, agricultural or food industry action that might be a cause for or solution to this. The BBC online report (BBC News, 2011) similarly weights most of its report towards the individual frame, with quotes from Dagfinn Aune, the lead author of the study and representatives from the charities Cancer Research UK and Beating Bowel Cancer:

"The more of this fibre you eat the better it is. Even moderate amounts have some effect" (Dagfinn Aune)

"We recommend that people eat a healthy balanced diet that includes plenty of dietary fibre, such as grains, cereals, fruit and vegetables to reduce the risk of developing bowel cancer.

"It is encouraging to know that simple changes to your diet and lifestyle could help protect you from the UK's second biggest cancer killer." (Cancer Research UK)

"Eating plenty of fibre is just one of many things you can do to lower your risk of developing the disease, along with keeping a healthy weight, being physically active, cutting down on alcohol, red and processed meat, and not smoking." (Beating Bowel Cancer) (BBC News, 2011)

However, at the end of the BBC report Professor Anne Tjønneland is quoted and mentions industry responsibility for increasing intake of whole grain foods:

"To increase the intake of these foods in Western countries, the health benefits must be actively communicated and the

accessibility of whole grain products greatly improved, preferably with a simple labelling system that helps consumers to choose products with high whole grain contents." (BBC News, 2011)

This issue of labelling or the question of how much responsibility the food industry have for public health is not raised in any of the other articles. Most of the coverage refers to what individuals can do to increase their intake of dietary fibre and whole grains. For example the Daily Mail's headline:

'Brown bread three times a day staves off bowel cancer' (Daily Mail, 2011)

And The Times feature in their T2 supplement:

'How do you fit this much fibre into what you eat each day? It helps to know which foods pack the biggest punches with the minimum "damage" in respect to other nutrients such as salt and sugar.' (Ursell, 2011)

The focus on fibre and whole grains in particular in much of the coverage echoes the work of Scrinis (2012) and Dixon (2009) who argue that the modern citizen is nutricentric; their diets are focused more on the sole criterion of their nutritional qualities at the expense of social, cultural, political or environmental aspects of diet. Scrinis (2012) and Dixon (2009) argue that this is reflected in nutritional research, which focuses on individual nutrients – in the case of this nutritional research, the media are reflecting this in their reporting. For example Ursell (2011) in The Times gives advice on how to increase fibre in your diet:

'Top of the list for cereal fibre comes All-Bran. The breakfast cereal provides 11g of fibre per 40g serving. With semi-skimmed milk, this gives you 193 calories and 0.6g of your daily 6g maximum of salt. A 30g serving of Bran Flakes gives you 4.5g of fibre and 0.5g of salt. Wholemeal bread is also good with 5g of fibre per two medium size slices and 0.9g of salt.' (Ursell, 2011)

Lang et al (2009) note that nutrition is often criticized for giving contradictory evidence and so is not able to give public policy advice. This impression of nutrition as a science is reinforced by media coverage, as Lupton and Chapman (1995) note, apparent contradictions in nutrition research can be amplified by the press, leading to distrust among readers. In the current study, almost all the coverage noted that the researchers did not find evidence of a similar linear decrease in the risk of colorectal cancer from fruit, vegetable or legume fibre:

'Experts said cereal fibre and whole grains in particular cut the risk but found "no significant evidence" of a reduction for fibre in fruit, vegetables and legumes such as lentils and beans.' (Kirby, 2011)

'Eating fibre-rich nuts and cereals cuts bowel cancer but fibre in fruit and veg has no significant effect, says a study.' (The Sun, 2011)

'High fibre diets CAN reduce the risk of bowel cancer – but fruit, vegetables and lentils have no effect, say scientists' (Mail Online, 2011)

Some readers may have interpreted this as a reason not to eat more fruit and vegetables, which have many other health benefits. The reader-generated comment pages of three of the online newspaper articles in the data also focus on contradictory evidence in nutrition reporting. The advance of online journalism has opened up information and offered a 'convergence' opportunity in which audiences can interact with journalists (McQuail 2013). Research into online comment pages is in its infancy, however, reader-generated comments can offer interesting research opportunities. It is important to note that comments cannot be said to be representative of the general public and that those making comments are more likely to make negative comments or disagree with the subject matter of the article (Regan et al 2014). Despite these reservations this data gives us an insight into readers' real-time responses to published articles that were not available before the advent of online journalism (Laslo et al, 2011). Three of the online articles published reader-generated comments, which appeared below the respective articles in the Independent online (3 comments), the Mail Online (67 comments) and The Telegraph online (9 comments). A key theme in these comments is that nutrition advice is contradictory:

'The advice used to be to eat as little fibre as possible if you suffered from bowel problems and constipation. Another about-turn on food-advice'

'And all those 'five a day' veges we've been told to eat have done no good at all in this respect. I won't eat so many now and will save myself all that chronic indigestion. From now on I will ignore all these scientists. Thank you.'

'I think I'll wait until what the scientist say next. It shouldn't be long. Their views change every week.'

Some readers tried to redress the information given, which they felt contradicted existing advice on fruit and vegetable consumption:

'This research does NOT devalue the importance of fruit and vegetables in the diet. It was only looking at which types of dietary fibre reduce the incidence of one type of cancer. It wasn't concerned with all the micronutrients provided by fruit and veg...'

'The cruciferous vegetables broccoli and cauliflower were proven to inhibit the growth of bowel tumours many years ago'

'Eat everyday BROCCOLI to avoid that cancer. It's proved, scientifically, years ago.'

As noted above, Lang et al (2009, p102) argue that nutrition is often seen as a personal and private matter in which no other body has the moral right to intervene. In their study of reader generated comments on articles about dietary risks Regan et al (2014) noted resentment among some of the commenters about being told what to eat. Some readers' comments in this current study reflected this:

‘And next week, (or earlier) a rival “Team of Scientists” will reveal “groundbreaking” new “research” that suggests the exact opposite....I now routinely and deliberately IGNORE all of this rubbish and eat whatever I damned well please in moderation.’

‘For gods sake by the time I’ve eaten 3 portions of fibre, 5 portions of fruit and veg and my RDA of protein and carbs I won’t have any room left for cake!’

‘Eat this food to prevent this form of cancer, eat this food to prevent another form of cancer, blimey the stress of worrying about what we can or can’t eat is likely to bring on a heart attack’

A small number of readers’ comments addressed the social and economic responsibilities that interact with individual responsibilities for nutrition:

‘Wholemeal flour and high fibre cereals are more expensive in the supermarket so Bowel Cancer is also associated with poverty’

‘It would help if Wholemeal flour for cake/pastry making self raising and plain as well as strong wholemeal for bread was sold at the same price as white flour. There really is no justification for the higher price of less refined products....It’s no wonder colon cancer incidence is associated with poverty.’

In addition one organization, UK-based pressure group the Real Bread Campaign sought to use message boards to promote their own campaign leaving the same message on all three message boards:

‘Always nice to have a study to reiterate what has been known for years. One thing – other research has found that to get the most out of wholegrain cereals, they should be fermented in the presence of lactic acid bacteria – e.g. genuine long-fermented sourdough Real Bread.’

4. Discussion: Responsibilising eaters through the media

The three key questions for this research paper were: How is nutrition discourse about diet and bowel cancer mediated by the UK press?; how does UK press coverage frame nutrition messages such as responsibility for diet?; and can this framing be explained by media routines and conventions? The homogeneity of the coverage in a relatively small number of media outlets could be explained by the media’s tendency to shy away from covering bowel cancer (Gerlach et al 1997, Lewison et al 2008, MacKenzie et al, 2010, Williamson et al, 2011, Konfortion et al 2014), perhaps due to prurience about discussing bowels or bowel cancer symptoms and a general taboo associated with the disease. MacKenzie et al (2010) argue media neglect of bowel cancer could be an important factor in explaining low participation in colorectal screening programmes, however in common with Konfortion et al (2014)

they note that increased coverage does not necessarily increase public awareness or include useful factual or educational information (Jones et al 2012, Hilton et al, 2010). Konfortion et al (2014) suggest using the readership profiles of newspapers to help target and tailor messages to at-risk groups. The coverage in local and regional press in my data, while only appearing in a few newspapers, was confined to those based in northern English and Scottish towns and cities. However it is not possible to say this was a deliberate targeting of health information for their local readership and these articles did not specifically mention the higher incidence rates of bowel cancer in men in the north of England, Scotland and Northern Ireland. The homogeneity of coverage is also explained by inter-media agenda-setting theories; the tendency of the media to copy each other (McCombs and Shaw 1972, Golan, 2006, Djerf-Pierre 2012). This is partly due to their shared news values but also in the case of newspapers an economic model of declining sales figures leading to a very competitive market in which they are expected to produce more copy with less income (Lewis et al 2008, Davies 2009).

Following Scrinis (2012) and Dixon's (2009) observations that nutrition discourse emphasizes single nutrients over a more balanced or rounded view of diet, the coverage focused on the 'whole grains' discussed in Aune et al's work. This is not surprising given that the study concerned the effect of whole grains in the diet, however, the focus on nutrition values over other aspects of diet in the media coverage echoes Dixon's (2009) concern that through nutricentrism 'eating has become a personal project of endless self-improvement rather than part of a timeless social institution' (p.323). The media may also be reflecting a prevailing tendency in nutrition research to focus on the biochemical aspects of nutrition. Lang et al (2009) call this the 'life sciences' approach to nutrition and argue it is currently the dominant in a typology of three main nutrititions, the other two being social nutrition, which focuses more on embedding nutrition within society, and eco-nutrition, which suggests that nutrition has to accept its environmental basis and implications. By focusing on the benefits of whole grains in isolation and with an individualized framing the UK press miss an opportunity to discuss diet in more rounded terms that take into account the broader drivers of dietary choices such as cultural background, personal taste, socio-economic status, availability of foods or geographical location. This, as pointed out by Dixon (2009) and Scrinis (2012) reflects the hegemonic 'nutritional reductionism' or 'nutricentrism' in which nutritional elements are the focus of nutritional research and subsequent dietary advice.

Coverage of this complex health issue was often set in the 'lifestyle' frame and emphasised individual responsibility for diet more than the responsibility of industry, government or civil society. This supports previous research which has shown that when reporting cancer research and research into diet-related conditions such as cardio-vascular disease and obesity, media coverage tends to focus responsibility disproportionately on the individual rather than framing the issue as the responsibility of the state or civil society (Lawrence, 2004, Hilton et al 2012, Hellyer and Haddock-Fraser 2011, Clarke and Everest 2006). In addition a health geography perspective was lacking in the coverage of this research despite the volume

of work linking place and space to health (Kearns, 1993; Brown and Duncan, 2002; Cummins et al 2007) and evidence showing a differentiation in bowel cancer incidence between northern and southern parts of the UK (Cancer Research UK, 2016) as well as a small association between deprivation and incidence of bowel cancer for men (Cancer Research UK, 2016).

The responsabilisation of individuals in this case suggests the media collude not only in 'nutricentrism' (Dixon 2009) but also in what Greenhough (2010) sees as a neo-Foucauldian 'state-led biological citizenship' in which individuals have responsibilities, which are articulated by 'biological governance' (Greenhough, 2010, p156). Quoting Rose (2007) and echoing Dixon's concerns about 'endless self-improvement' (Dixon, 2009, p.323) Greenhough outlines the citizen's responsibility to maintain their health:

"The active biological citizen must engage in a constant work of self-evaluation and the modulation of conduct, diet, lifestyle, and drug regime, in response to the changing requirements of the susceptible body" (Rose, 2007, p.154 quoted in Greenhough (2010) p.156).

Rose and Novas (2004) note that the internet has played an important role in the construction of the biological citizen – providing access to more and more 'self-improvement' resources. This can provide a platform for what Hayes-Conroy and Hayes-Conroy (2013) call 'diverse nutritions', allowing space for alternatives to the hegemonic nutrition science. In addition, as Greenhough (2010) points out, online forums can provide a place for individuals and groups to challenge state-led biological citizenship. In this case reader-generated comments highlighted alternative framings of the nutrition message, which, in a small number of cases, did take into account broader drivers of nutrition choices such as pricing and set nutrition messages in a broader context of an overall diet. This echoes McQuail's (2013) work in which he sees a 'convergence' between journalists and audiences made possible by the interactive potential of online media. Concerns remain that a lack of editorial judgement or obligation on these comments can pose difficulties around accuracy and/or offense (Richardson and Stanyer, 2011, McQuail 2013), however this is seen by some as increasing the potential for democratic debate in the media (Richardson and Stanyer, 2011). Normative theories of media and society discuss the function of the press in general and journalists in particular. McQuail (2010) drawing on Cohen (1963) argues that a broad choice exists for journalists between 'neutral reporter' and 'participant':

'The first refers to ideas of the press as informer, interpreter and instrument of government (lending itself as channel or mirror), the second to the traditional 'fourth estate' notion, covering ideas of the press as representative of the public, critic of government, advocate of policy and general watchdog.' (McQuail, 2010, p.283)

Of course other roles for journalists have been defined such as that of adversary, or mediator and McQuail (2010) also notes that many journalists hold a plurality of roles, rather than remaining exclusively aligned to one or other role. However, given that the power of the press to set the political

and public agenda has been shown to be widespread (Wolfe et al 2013), and the media framing of problems can influence how the public evaluate policies (Iyengar, 1991) and how they understand issues (McCombs, 2004) the 'watchdog' or 'critic' role is important. In addition in weighting attention on one aspect of health policy over another the media help to set the tone for subsequent policy development (Baumgartner and Jones 1993, Wolfe et al, 2013). Lewis et al (2008) argue that the lack of interrogation of public policy on behalf of the press is due to the reliance of the national and local media on press agency reports and this current study supports this argument.

5. Conclusion

My research shows that the local and regional coverage of this research paper was particularly dependent on one source: the Press Association report. That local and regional papers (remembering only 6 of a possible 595 UK local and regional newspapers archived by the Nexis UK database covered this story) as well as some national press, relied on the Press Association report for their stories perhaps reflects restraints on their resources, but also highlights a concern that original journalism is being lost in favour of 'churnalism' or the reprinting of information by journalists. From a different perspective this situation gives an organisation like the Press Association, and its health correspondent significant power as gatekeepers of information. Journalists have become increasingly reliant on press releases and news agencies to write their copy (Bartlett et al 2002, Lewis et al 2008), my research echoes a concern among media scholars about a reliance of journalists on public relations professionals and news agencies (Lewis et al 2008, Davies 2009, Williams et al 2009) which can challenge the UK press's claims to journalistic independence and the role of journalists as a fourth estate; calling into question their ability to hold policymakers to account.

Newspapers in many cases did not report the complexity of the study and did not report the limitations of the research. Previous studies have shown that this is often the case, but as Jensen found in his multiple message experiment (Jensen 2008), both scientists and journalists were viewed as more trustworthy when study limitations were reported. However, the study itself was large and complex, which could prove a challenge to a busy journalist on a tight deadline. Therefore the information provided by conduits, translators or 'gatekeepers' of the information such as the press release or press agency reports is important. There was little questioning of the information in the study or investigation of the political, social or geographical causes or solutions to the evidence presented. Journalists in many cases reprinted what they received either from the Press Association or reported a version of the research as presented in the BMJ press release, there was little interrogation of either the evidence or its wider societal implications.

This research has shown the lack of a geographies of health perspective within health media coverage. If health geography had a higher profile in media circles could this make a difference to how public health

issues and nutrition are mediated? While health geographers may have moved to embrace a social model of health, encompassing environmental, political and economic causes of disease, it seems from this study that newspapers and their correspondents have not followed suit. The low scientific status of nutrition (Lang et al 2009) may contribute to this but it also reflects a lack of diversity in the commentators that the media chose to use in health media coverage. As noted by Lewison et al (2008) some actors gain privileged access to the media while others do not appear as commentators. Social media and online interaction between readers and journalists may be able to contribute to diversification of media framing. Further research is needed to examine the lack of a geographies of health perspective, and how commentators could breach media gatekeepers and play a role in framing health and nutrition reporting. In addition the role of social media and readers' comments in particular needs further investigation, paying attention to the effect this has on journalists and their practices.

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APPENDIX A: Coding framework

- 1 whether the report mentioned the size of the study
- 2 whether the report mentioned the publication the research appeared in (BMJ)
- 3 whether the report mentioned that it was peer reviewed
- 4 whether the report mentioned that it was a study on humans or animals
- 5 whether the report mentioned the limitations of the study
- 6 whether the report mentioned the authors of the study
- 7 whether the report mentioned the salient results of the study:
 - a) a high dietary intake of either cereal or wholegrain fibre was associated with linear decreases in the risk of bowel cancer
 - b) neither fruit, vegetable nor legume fibre was found to have a similar effect
 - c) intake of dietary fibre, particularly cereal fibre and whole grains was associated with a small reduction in the risk of colorectal cancer.
- 8 whether the report mentioned the reduction in risk
 - a) in absolute terms
 - b) in relative terms
- 9 whether the report mentioned the funders of the study