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Using newspaper content analysis to understand media representations of health issues and inform improved health policy advocacy

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Abstract

The mass media represent a powerful societal institution that reflects and shapes the social, cultural and political world. Within health research, media content analysis is an increasingly popular tool for examining how the media represent, and potentially influence, audiences' understandings of health. This submission comprises eight published papers analysing UK news media representations of health issues and policies, and an explanatory essay. The essay seeks to contextualise the papers within relevant theoretical literatures and demonstrate the papers' original contributions, both individually and collectively, to knowledge in health communication and policy advocacy. The analytical developments between the submitted papers are contextualised within literatures on the mass media, media research and policymaking, each of which is has been a site of paradigmatic change.

The submitted papers demonstrate the application of content analysis to UK newspaper and online news coverage of obesity, single-episodic drinking, alcohol pricing policy, smoke-free policy and e-cigarette regulation. Approaches used include quantitative, qualitative and mixed-methods content analysis, consistent with the epistemological heterogeneity of the field. Each paper is informed by relevant theory, chiefly agenda setting theory and framing theory. While each paper produces its own novel topic-specific insights, the explanatory essay also considers commonalities across topics that lead to transferrable learning for practice in health communication and policy advocacy.

The submitted works' novel contributions to knowledge include: documenting media frames; analysing trends within media frames; documenting stakeholders' engagement in media debates; highlighting the strategic importance of defining target groups; identifying areas for improvement in media health communication; identifying the need for a social justice approach to public health communication; and identifying the need to engage with values of public health. Specific transferrable learning emerging from synthesis of findings includes: the effectiveness of positioning children as affected groups in negating opposition arguments about individual responsibility; the opportunity to use trends in media coverage to anticipate media framing and policy actor engagement in media debates; and the need for health communication to avoid reproducing harmful stigma, stereotyping and inequality.

While content analysis alone cannot provide conclusive prescriptions for media engagement, the submitted works mitigate the inherent restrictions of the method through the use of rigorous, theory-led methods and the triangulation of findings between different topics and analytical approaches. In doing so, the submitted works contribute to a growing international literature by providing health communicators and policy advocates with novel learning that may contribute to practice. The explanatory essay justifies the importance of studying mass media representations of health issues and policies, and demonstrates the contribution of the submitted works to understanding media representations of health issues and informing improved health policy advocacy.

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Acknowledgements

I thank Prof Shona Hilton for supervising me throughout the conduct of the submitted work and completion of the explanatory essay. Shona has acted as my mentor since 2011, guiding me while demonstrating faith in my ability to work independently, which has enabled me to produce the papers of which this submission is comprised. I hope that Shona's dynamic and practical approach to research is reflected in this submission. I thank each of my co-authors from the submitted papers, and everyone else I have worked with at the University of Glasgow; I have learned a great deal from you all. I thank my friends and colleagues, Dr Amy Nimegeer, Dr Gillian Fergie, Christina Buckton, Lauren White, Dr Vittal Kattikireddi, and Prof Danny Wight. My biggest thanks go to my wife, Dr Susan Patterson, and my parents, Jim and Alison, for their love and support. No thanks to Rowan Patterson.

Author declaration

University of Glasgow

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Degree of PhD by Published Work

<u>Author Declaration</u>
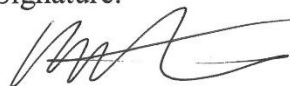
I, Christopher Charles Patterson, declare that, except when explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any degree at the University of Glasgow or any other institution.

Information derived from the published and unpublished work of others has been acknowledged.

Printed name:

CHRISTOPHER CHARLES PATTERSON

Signature:

Date:

21st November 2019

List of included papers

Theme I: Representations of public health issues	
Paper I	HILTON, S., **PATTERSON, C**. & TEYHAN, A. 2012. Escalating coverage of obesity in UK newspapers: the evolution and framing of the "obesity epidemic" from 1996 to 2010. *Obesity,* 20**,** 1688-1695.
Paper II	**PATTERSON, C.**& HILTON, S. 2013. Normalisation and stigmatisation of obesity in UK newspapers: a visual content analysis. *The Open Obesity Journal,* 5**,** 82-91.
Paper III	**PATTERSON, C.**, EMSLIE, C., MASON, O., FERGIE, G. & HILTON, S. 2016. Content analysis of UK newspaper and online news representations of women's and men's 'binge' drinking: a challenge for communicating evidence-based messages about single-episodic drinking? *BMJ open,* 6**,** e013124.

Theme II: Policy debates	
Paper IV	**PATTERSON, C.**, KATIKIREDDI, S. V., WOOD, K. & HILTON, S. 2014. Representations of minimum unit pricing for alcohol in UK newspapers: a case study of a public health policy debate. *Journal of Public Health,* 37**,** 40-49.
Paper V	WOOD, K., **PATTERSON, C.**, KATIKIREDDI, S. V. & HILTON, S. 2014. Harms to 'others' from alcohol consumption in the minimum unit pricing policy debate: a qualitative content analysis of UK newspapers (2005–12). *Addiction,* 109**,** 578-584.
Paper VI	**PATTERSON, C.**, SEMPLE, S., WOOD, K., DUFFY, S. & HILTON, S. 2015. A quantitative content analysis of UK newsprint coverage of proposed legislation to prohibit smoking in private vehicles carrying children. *BMC Public Health,* 15**,** 760.
Paper VII	HILTON, S., WOOD, K., BAIN, J., **PATTERSON, C.**, DUFFY, S. & SEMPLE, S. 2014. Newsprint coverage of smoking in cars carrying children: a case study of public and scientific opinion driving the policy debate. *BMC Public Health,* 14, 1116.
Paper VIII	**PATTERSON, C.**, HILTON, S. & WEISHAAR, H. 2016. Who thinks what about e-cigarette regulation? A content analysis of UK newspapers. *Addiction,* 111**,** 1267-1274.

Preface

I began my research career at the MRC/CSO Social and Public Health Sciences Unit (SPHSU) in September 2011 as a Research Assistant, initially within the *Understandings and Use of Public Health Research* programme, led by Prof Shona Hilton. Prior to joining MRC/CSO SPHSU, I completed a BA (Hons) in Psychology and Sociology at Edinburgh Napier University and an MSc in Social Research at the University of Edinburgh.

At MRC/CSO SPHSU I have built a body of research aligned with the programme's goals of rapidly responding to emerging public health debates and understanding how research evidence is used to translate health knowledge into policy and practice. While I have published research based on qualitative interviews (Patterson et al., 2015a) and focus groups (Hilton et al., 2013), the bulk of my published research has used media content analysis methods, including the eight papers selected for this submission (Hilton et al., 2012; Patterson and Hilton, 2013; Hilton et al., 2014a; Patterson et al., 2014; Wood et al., 2014; Patterson et al., 2015b; Patterson et al., 2016a; Patterson et al., 2016b). I have published a further ten papers using media content analysis methods that I did not select for inclusion in this submission (Hilton et al., 2014b; MacLean et al., 2015; Sweeting et al., 2015; Buckton et al., 2018; Macdonald et al., 2018; van Hooft et al., 2018; Foster et al., 2019; Hilton et al., 2019; Nimegeer et al., 2019; Rush et al., 2019). I have presented my research at numerous national and international conferences in the fields of medical sociology, public health, tobacco control, alcohol policy, weight stigma and public engagement. My current research focuses on policy debates around unhealthy commodities and the commercial determinants of health, as well as the interface between health evidence and the public. In addition to developing my own research, I have supervised three successful MSc students using content analysis methods.

The eight papers I have submitted for the degree of PhD by published work were selected to demonstrate a coherent and substantial contribution to knowledge and practice in media content analysis, health communication and policy studies. The papers illustrate the progression of my contributions to literature from 2012-2016, establishing and building upon rigorous methods for using newspaper content analysis to better understand representations of public health issues and policies. The submitted papers are grouped into two thematic focuses of the body of work: understanding representations of public health issues and understanding how public health policy debates play out in the media. I am the

lead author of five of the submitted papers, and a co-author of three. The selected papers have been included due to their relevance and my substantial, active role in their inception, conduct and reporting.

This explanatory essay contextualises the submitted papers within the literatures on mass media, media research and public health policy, and illustrate their original contributions to knowledge, practice and process.

Explanatory essay

1. Introduction

Mass media is a powerful institution that reflects and shapes the social, cultural and political world (McQuail, 2010). Mass media can be defined as the undifferentiated technological transmission of messages, where the same message is distributed to every individual within a media entity's audience (Neuendorf, 1990). Studying how mass media represents health issues enables understandings of the messages public and policy audiences receive, and can inform efforts to improve health communication and policy advocacy (Dorfman, 2003).

This submission comprises eight published papers reporting content analyses of UK news media representations of health issues and policies. Content analysis and related techniques have been applied to media representations of countless health issues, including obesity (Boero, 2007; De Brún et al., 2012), alcohol (Day et al., 2004; Nicholls, 2011), tobacco (Kennedy and Bero, 1999; Wakefield et al., 2003), drugs (Jernigan and Dorfman, 1996; Atkinson et al., 2019), infant nutrition (Henderson, 1999; Henderson et al., 2000), and health inequalities (Gollust et al., 2009; Niederdeppe et al., 2013). The submitted papers contribute to this diversity in their analyses of obesity (**Papers I** & **II**), gender and single-episodic drinking (**Paper III**), alcohol policy (**Papers IV** & **V**), tobacco control policy (**Papers VI** & **VII**) and e-cigarette regulation (**Paper VIII**). This diverse work illustrates the value of media content analysis in public health research. The aims of this explanatory essay are, firstly, to contextualise the papers within theoretical literatures on mass media, media research and public health policy, and, secondly, to illustrate their original contributions to knowledge and practice.

In section 2, the submitted papers are contextualised within literature on mass media, including a history of media research, a discussion of theory in media research, an examination of the role of power and ideology and discussion of media research within a changing media landscape. I examine two theories key to the submitted papers: agenda setting and framing.

In section 3, my methodology is contextualised within a paradigm shift in communication research. I position **Paper I** as an exemplar of a positivist approach to content analysis, and discuss the subsequent papers' methodological developments in the context of critical

challenges to positivism in communications research. I argue for reconciliation of quantitative and qualitative analysis, and the potential of integrating automated approaches.

In section 4, the submitted papers are related to policy studies literature. I briefly examine developments in policy theory and discuss the role of mass media within leading policy models, then relate the submitted papers to the theories of punctuated equilibrium, the advocacy coalition framework and the narrative policy framework. Finally, I reflect on positionality, defining my own position, discussing tensions between research and advocacy, and describing the extent to which the submitted papers represent my own perspective.

In section 5, I summarise my contextualisation of the papers within different literatures, highlight the papers' contributions to methodology, policy and practice, consider the limitations and strengths of the research, and discuss current and future research directions. Finally, in section 6, I conclude that the submission meets the aims of contextualising the submitted papers within literature and illustrating their contributions to knowledge, policy and practice.

The submitted papers are reproduced in full following the list of references.

2. Health, theory, power and changing media context

2.1. Media research and health

The field of mass media research is founded on the pervasive role of mass media in culture and society (Newbold et al., 2002). Shoemaker and Reese (1996) define two rationales for studying media: a humanist interest in media as a manifestation of wider culture, and a behaviourist interest in media as *"part of a chain of cause and effect"* (p.29). The submitted papers partially embody the humanistic approach, such as in **Paper III**'s analysis of the reproduction of societal gender stereotypes. However, the papers predominantly exhibit the behaviourist approach, holding that mass media influences society, often as a venue in which actors exert power. The papers do not demonstrate a causal chain, but are founded on disciplinarily-rooted assumptions of the media's position in such a chain (Shoemaker and Reese, 1996). I present recommendations for practice that are grounded, not in causal evidence, but in plausible pathways to influence.

Health is a major focus of UK news media (Entwistle and Hancock-Beaulieu, 1992), and media health content influences public and practitioner understandings and behaviours (Phillips et al., 1991; Seale, 2002; Sharma et al., 2003; Suppli et al., 2018). Misinformation in news media can negatively impact audiences' understandings and intentions (Clark et al., 2019), but mass media play an important role in information about health (Schwitzer et al., 2005; Hilton and Hunt, 2010). The submitted papers' media focus is justified by mass media's status as a key site of cultural narratives about health and health policy, communicating health issues (Neuendorf, 1990) and policy debates (e.g. Hawkins and Holden, 2013).

2.2. Theory in media research

Media research literature exhibits great depth and diversity of theory, enabling media researchers to understand and explain media, analyse media's position within the social world, identify appropriate analytical approaches and make inferences about future developments (Boyd-Barrett, 2002). Theories such as reception theory (Hall, 1980) and active audience theory (Morley and Silverstone, 2002) provide frameworks for understanding how audiences receive messages. Work by theorists such as McCombs (1972), Entman (1993), Druckman (2001), Bandura (1971), Gerber (1998) and Rubin (2009) seeks to explain how messages affect audiences and society. Theorists have also

examined media reproduction of societal power and ideology (Hall, 1986; Hall, 1993; Habermas, 1998; Curran, 2005; Castells, 2010) and explained the impacts of the changing media landscape (e.g. Hamelink, 1994; Schiller, 1999).

In the submitted papers I primarily drew on agenda setting theory (McCombs and Shaw, 1972) and Entman's conceptualisation of framing (1993) to set conceptual foundations and structure my analysis and interpretation. Agenda setting concerns mass media's influence on which topics occupy public consciousness (McCombs and Shaw, 1972), while framing concerns how nuanced differences in representations of issues can influence individuals' understandings or behaviours (Druckman, 2001). These theories are frequently applied in content analyses of health messages, and often used together (Brown, 2002; Manganello and Blake, 2010).

The media's agenda-setting role is well established and empirically supported (Lippmann, 1922; Cohen, 1963; McCombs and Shaw, 1972). Cohen (1963, p.13) asserted that the media *"may not be successful much of the time in telling people what to think, but it is stunningly successful in telling its readers what to think about"*. This principle was formalised empirically in McCombs and Shaw's (1972) influential and enduring agenda setting theory (Neuendorf, 1990; Zhu and Blood, 1997; Wallsten, 2007; Russell Neuman et al., 2014; Kim et al., 2017b). Agenda setting explains that mass media grants differing prominence to different issues. While audiences actively interpret content to a degree (Papadouka et al., 2016), the salience media grants to specific issues demonstrably influences public awareness (Coleman et al., 2009). Mass media's capacity to put health problems, and potential solutions, on public and policy agendas underpins the submitted papers' objective of understanding the potential impact of media content on health understandings and policy.

Agenda setting theory is closely related to framing theory, with some characterising framing as an aspect of agenda setting (Coleman et al., 2009). Unlike agenda setting, framing is inconsistently defined, theorised and applied (Entman, 1993; Scheufele, 1999; Cacciatore et al., 2016; Koon et al., 2016). From a sociological perspective, initially popularised by Bateson (1972) and Goffman (1974), framing can be defined as *"a means of understanding how people construct meaning or make sense of the everyday world"* (Cacciatore et al., 2016, p.10). Within sociology and policy analysis, framing is predominantly a post-positivist and constructivist theory (Fischer, 2003; Koon et al.,

2016), acknowledging that knowledge and reality are produced by social processes and interpreted subjectively by individuals (Berger and Luckmann, 1991).

Framing theory has been developed within media analysis by various theorists, including Entman (1993), D'Angelo (2006) and De Vreese (2012). Just as mass media sets agendas by prioritising and deprioritising issues, salience-based forms of framing theory describe how media content highlights and omits specific aspects of issues (Entman, 1993; Cacciatore et al., 2016). Media content constructs media frames, while individuals maintain their own individual frames, and a 'framing effect' (Scheufele, 1999; Druckman, 2001) occurs when media frames influence individual frames. While frames can be constructed (wholly or partially) within discrete communicative units, such as individual newspaper articles, my quantitative frame analyses are primarily concerned with frames constructed across many articles. For example, **Paper I** analyses the changing framing of the obesity 'epidemic' across 2,414 articles and 15 years, taking the position that the aggregate frame produced constitutes a population-level influence on public and political awareness and understandings.

While mass media's powerful agenda-setting role is well understood, framing effects are more mercurial (Druckman, 2001; Burton, 2004; McCombs and Reynolds, 2008). Frame effects have been confirmed by a wealth of experimental and natural experimental research (e.g.Kahneman and Tversky, 1984; Iyengar, 1996; Drew and Weaver, 2006; Matthes, 2009; Bartels, 2013; Prior, 2013; Bachhuber et al., 2015; Reeves and de Vries, 2016). For example, Barry and colleagues (2013) demonstrated how individualising obesity can decrease readers' support for obesity policies. However, experimental evidence is limited to predominantly short-term effects in experimental contexts, and cannot be confidently generalised (Laughey, 2007; Reeves et al., 2016). The influence of media content is mediated by the complexity of the media environment, the activeness of audiences' engagement, and the topics and forms of media involved (Druckman, 2005; Davis, 2007). The relevance of the uncertainty of media effects is discussed in section 5.2.

In the submitted papers I applied framing theory as a transferrable framework for structured analysis of media representations. Entman's (1993) influential, salience-based conceptualisation identifies four aspects of frames: they 'define problems', 'diagnose causes', 'make moral judgements' and 'suggest remedies'. In **Papers I**, **III**, **IV** and **VI**, these aspects informed high-level categories in coding instruments, under which emergent

themes were classified. For example, **Paper VI** documents media by categorising elements of content as: definitions of the problem, its drivers and sociocultural factors; judgements about the roles of parents and carers; and potential policy responses.

Theory is increasingly used in media content analysis of health topics (Manganello and Blake, 2010), and I engaged with media theory increasingly throughout the submitted papers. **Paper I** was informed by agenda setting theory and framing theory, though they were not directly cited. My subsequent papers engaged with theory more explicitly, employing agenda setting (**Papers II-VII**) and framing theory (**Paper IV, VI, VII**), as well as theoretical work by Scheufele and Tewksbury (2007) (**Paper III, IV, VI, VII**) and Schneider and Ingram (1993) (**Papers I, IV, VI**). I employed these theories to support assumptions, structure analysis and interpret findings.

Agenda-setting theory underpinned the submitted papers as the body of empirical evidence within agenda setting literature demonstrates that mass media content influences audiences' awareness of issues. For example, **Paper VI** identifies mass media's influence on public awareness of issues as being relevant to policymaking due to the importance of public opinion to policymakers' decision-making. Theoretical work on framing by Entman (1993) and Scheufele and Tewksbury (2007) was used to provide frameworks for structuring coding and analysis of media data. For example, **Paper I** used Entman's framework to enable rigorous capture of media framing of obesity, including: definitions of the problem; drivers of the problem; and potential solutions to the problem. The same framework was adapted to later papers, such as to the capture of framings of the alcohol problem and MUP in **Paper IV**. I found that the use of this framework to structure coding instruments enabled robust quantitative documentation of media frames. Schneider and Ingram's (1993) theoretical work on the role of social construction of target populations in policymaking was drawn upon in interpreting findings related to obesity, MUP and smoke-free policy (see section 5.1).

My experience is consistent with Stevenson's (1992) assertion that theory enables what would be isolated findings to become generalisable, transcending temporal and topical silos. My use of theory has both deductive and inductive aspects: I used theory deductively to structure analytical frameworks, but much of the thematic content within those frameworks emerged inductively from the data, and analyses typically involved both testing *a priori* hypotheses and exploring emergent themes.

Alongside agenda setting theory and framing theory, another pairing common to content analysis is cultivation theory and social learning theory (Brown, 2002; Manganello and Blake, 2010). Gerbner's (1998) cultivation theory models gradual alignment between media representations and audience perceptions of reality, predominantly applied to studying television, but also newspapers (Arendt, 2010). Bandura's (1971) social learning theory (and social cognitive theory (Bandura, 1986)) describes how individuals' model their behaviours on experiences and observations of their social worlds, including media (Bandura, 2001), and has been applied to newspapers, among other media (Wiegman et al., 1989; Mogaji, 2015). My use of agenda setting and framing theory, and neither cultivation nor social learning theory, was warranted by their appropriateness to studying print media and social policy, and my increasingly interpretivist approach (section 3). The importance of media agenda setting and framing to policy theory is discussed in section 4.1.

2.3. Mass media, power and ideology

One rationale for studying media content is the role of mass communication in the exercise of power and reproduction of social relations, which has been established since Luther harnessed the emergent print capitalism to initiate the Protestant Reformation (Anderson, 1983). Media researchers should engage with issues of power in the creation, dissemination and reception of media (Henderson and Hilton, 2018). Each topic studied in the submitted papers is a politicised site of ideological communication. For example, media constructions of single-episodic drinking (**Paper III**) are laden with intersecting discourses of gender, vulnerability, respectability, surveillance and control (Day et al., 2004; Measham and Østergaard, 2009). The submitted papers primarily constitute attempts to further knowledge within a pragmatic, applied health research framework, and do not explicitly engage with critical theoretical analyses of the media context. In this section, I engage with literature on power and ideology in mass media, considering various theoretical perspectives on mass media's role in reproducing power and ideology.

Theorists from various disciplines have examined mass media's role in constructing the social and political world, with modern media institutions representing "*a material force*" defining politics, culture and economic relations (Hall, 1989, p.43). While a strain of theory highlights audiences' ability to interpret media messages critically (Morley and Silverstone, 2002), this perspective may serve to mask the pernicious reproduction of power through media (Seaman, 1992). Habermas (1998) theorised that all political legitimacy derives from public discourse, with the powerful using communicative action

(in the media and elsewhere) to strategically disrupt rational communication and reinforce their political power (Allen, 2007; O'Mahony, 2010). From a Foucauldian perspective, mass media content can be understood as part of *"the apparatus of technologies of domination"* (Thorpe, 2008, p.199) through which societal power is expressed, as mass media suppresses freedom while masking its influence (McCoy, 1988). While from a Foucauldian perspective discourses are in constant competition, power is expressed in some discourses being heard more than others (Richardson, 1996).

Many theories of media and power share conceptual territory with framing theory. Hall (1986) theorised that ideological communication legitimises ideological 'logics' as fundamental, unchangeable truths, constructing limited social realities that constrain audiences' understandings and conceal society's true workings (McCoy, 1988; Makus, 1990). Similarly, Chomsky (1989) proposed the concept of the bounds of thinkable thought, a constrained spectrum of ideas that journalists can legitimately express (Mullen, 2010). In media coverage of policy debates (**Theme II**) actors engage within constrained discursive spaces (McCoy, 1988), where only arguments consistent with narratively-plausible media frames are likely to be transmitted to public and political audiences.

In Hall's (1986) analysis, ideology is deeply embedded within language, such that linguistic communication intrinsically transmits ideology regardless of authorial intent. Similarly, Franzosi (2004) presents narrative and social relations as homologous, such that the reproduction of power is inherent to communication. While communicators may be largely unconscious of the ideological function of language (Hall, 1986), political rhetoric, delivered by the media, is rife with ideological manipulations of language (Walton, 2001; Zarefsky, 2004; Poole, 2007). Within the health policy domain, the UK Prime Minister (at the time of writing), Boris Johnson, has assigned the Soft Drinks Industry Levy a moralising imperative by invoking the "sin tax" narrative (Iacobucci, 2019; Poole, 2019). In the media domain, Donald Trump redefined the concept of 'fake news' to serve the political narratives of his campaign. While the re-emergence of the term 'fake news' in 2016 initially referred to fraudulent websites masquerading as genuine news websites to spread disinformation, the Trump campaign repurposed 'fake news' as a term to defame reporting from genuine news sources that the campaign wished to characterise as biased and inaccurate (Nielsen and Graves, 2017; Tandoc Jr et al., 2018).

2.4. Studying the news in a changing media landscape

The terminology of 'fake news' emerged within a context of growing public distrust of mainstream news media, particularly in the UK (Newman et al., 2019), and decentralisation of news production (Curran, 2010). Changing public attitudes and fragmenting mass politics (Davis, 2003) coincided with profound, technologically-driven changes in the production and dissemination of news media, including newspapers' declining market share (Curran, 2010).

Fundamental changes in how and where people, particularly younger people (Thurman and Fletcher, 2019), access news have materially impacted news production (Fenton, 2010). Newspapers have attempted to adapt to external pressures in various ways, including: launching of online editions (Franklin, 2008), and some cases closing print editions (Thurman and Fletcher, 2018); cultivating social media presences (Ju et al., 2014); increasing use of wire agencies (Johnston and Forde, 2011); and employing fewer specialist journalists (Bauer et al., 2013; Daniels, 2018). Each of these developments impacts the content and quality of news. The decline of specialist health and science journalists is particularly relevant to the submitted papers, as that expertise is invaluable in assessing competing perspectives and evidence within contested health issues, particularly as academic press releases are often misleading (Sumner et al., 2016). For example, specialist knowledge is crucial in reporting on the stream of scientific claims punctuating coverage of obesity (**Papers I** & **II**) (Leask et al., 2010).

Traditional mass media institutions, including newspapers, have ceded territory and authority to emergent technologies, with news production decentralised such that any individual can author, reinterpret and disseminate news (Curran, 2010; Papadouka et al., 2016). While this decentralised news production has often been presented as a democratic force (Dean, 2009; Curran, 2010; Fenton, 2010; Andrejevic, 2018), this dissemination is predominantly conducted through a limited number of commercial social media platforms (Castells, 2010). The democratic value of these platforms has been called in to question by revelations that the algorithms that they use to deliver content have facilitated political disinformation campaigns (Caddwalladr, 2017; Badawy et al., 2018; Bradshaw and Howard, 2018). While these corporations play the role of publishers to some extent, they typically reject the responsibilities of publishers (Levin, 2019). Social media platforms constrain individuals, often unwittingly (Dutton, 2018), within 'filter bubbles' and 'echo chambers' (Quattrociocchi et al., 2016; Allcott and Gentzkow, 2017). Social media news

feeds, tailored to individuals by automated systems, can systematically constrain the range of narratives that an individual sees, and can therefore be compared with the role of traditional media frames in influencing individual perceptions of issues. (Cacciatore et al., 2016). If mass media is characterised by the delivery of the same message to each audience member, (Neuendorf, 1990), the algorithmically-personalised news feeds of social media platforms raise the question of whether they qualify as mass media (Dutton, 2018; Newman et al., 2019). In the health domain, data-driven targeting of messages on social media represents a dangerous new vector for the commercial determinants of health (Gupta et al., 2018; McKee and Stuckler, 2018) (see section 4.2).

The changing media environment may have repercussions for framing theory. Cacciatore and colleagues (2016) suggest researchers studying framing will experience increasing difficulty maintaining conceptual clarity in a digital media environment where news sources are increasingly fragmented and news more precisely targeted to individuals. The concept of framing is under threat from a cultural demand to replace subjective, and therefore potentially biased, journalistic framings with the 'frameless' communication of reality. Andrejevic (2018) suggests that a demand for framelessness has been driven by a combination of popular rejection of expertise and journalistic authority and of the technology industry's promotion of 'big data' for techno-utopian goals. From this perspective, technology may allow us to capture reality objectively and comprehensively, eliminating the need for subjective intermediaries, such as journalists, to package communication within frames. However, Andrejevic (2018) observes that, even if perfect capture and reproduction of reality were technologically possible, any presentation of facts will ultimately be interpreted subjectively by audiences.

Despite declining circulation (Press Gazette, 2018), newspapers remain relevant to media research as established newspaper brands continue to influence the public agenda and reflect public discourse (Meraz, 2009; Curran, 2010; Djerf-Pierre and Shehata, 2017). While UK audiences increasingly access news through social media (Newman et al., 2019), the articles accessed predominantly originate within established newspaper brands (Curran, 2010; Statista, 2014; Newman et al., 2019). Newspapers may be disproportionately important in setting policy agendas among elites (Davis, 2003; Jerit, 2008), particularly as the demographics of newspaper readership correlate with demographics of politicians (Chan and Goldthorpe, 2007; Greer and Jarman, 2010; Audickas and Cracknell, 2018; Clark, 2019; Thurman and Fletcher, 2019). Newspaper

articles lend themselves to rigorous, systematic analysis given their balance of detail and structural rigidity, compared to many electronic media. Despite the medium's continued relevance, however, researchers who aspire to represent the contemporary media landscape must engage with other media. The integration of online news in my research is discussed in section 5.3.

News is increasingly communicated visually (Newman et al., 2019). Just as written language embodies ideology (Hall, 1986), so do images, and their ideological function is veiled by the perceived objectivity of photography (Woollacott, 1982). In **Paper II** I analysed both the text and images of newspaper articles about obesity, identifying problematic representations that could not emerge from analysing text alone, illustrating the value of analysing news images. For example, I could not have identified newspapers' systematic mislabelling of body sizes in written content alone. **Paper II** contributes to a rich literature of content analysis of visual and multimedia representations of obesity (Heuer et al., 2011; Gollust et al., 2012; Yoo and Kim, 2012) and other health topics (e.g. Kim et al., 2010; Nicholls, 2011; Ahmed et al., 2016). In **Paper III** I reflected that, by omitting images, I may have excluded a crucial aspect of media representations of alcohol and gender, as images allow journalists to convey 'socially risky' messages from behind a 'shield of deniability' (Messaris and Abraham, 2008, p.220)

3. Epistemological and methodological context and contributions

3.1. The positivist orthodoxy of content analysis

The methodological progression within the submitted papers is best understood in the context of a paradigmatic crisis within content analysis practice, driven by critical challenges to dominant epistemologies. Content analysis is widely-used (Hsieh and Shannon, 2005) but inconsistently conceptualised. Scholars would typically support Weber's (1990, p.9) simple description of *"a set of procedures to make valid inferences from text"*, and emphasise the method's systematic nature (Berelson, 1952; Stone et al., 1966; Neuendorf, 2016) and the breadth of categories of text to which it can be applied (Kolbe and Burnett, 1991; Neuman, 1997; Macnamara, 2005). However, the field is divided over what analytical approaches constitute content analysis, and this division corresponds with positivist and constructivist epistemologies.

Despite some early qualitative inquiry in content analysis (Morgan, 1993), its history has been dominated by positivist epistemology and quantitative analysis (Macnamara, 2005). Lasswell, who introduced content analysis to media research (Lasswell, 1927), later formalised the method with a focus on "*optimum objectivity, precision, and generality*" (Laswell et al., 1952, p.34). Berelson emphasised *"the objective, systematic and quantitative description"* of "*manifest content*" (Berelson, 1952, p.18). More recently, Neuendorf (2016) defines content analysis as *"systematic, objective, quantitative"*, (p.1), explicitly highlighting a positivistic aspiration to objectivity.

Of the submitted papers, **Paper I** adheres most closely to positivist conceptualisations of content analysis. The research design involved quantitative coding of a large, representative sample of newspaper articles, systematically reducing language to quantitative data for analysis with inferential statistics. As well as contributing to understandings and practice (section 5.1), **Paper I** has been widely cited as a methodological source in media analysis literature (Epstein et al., 2013; Kesten et al., 2014; Purcell et al., 2014; Atanasova, 2015; Happer and Philo, 2016; Rowley, 2016; Weishaar et al., 2016; Robinson et al., 2018). The research design established in **Paper I** informed the other submitted papers (particularly **Papers IV** and **VI**) and my subsequent research (e.g. Buckton et al., 2018; Macdonald et al., 2018; van Hooft et al., 2018; Foster et al., 2019; Nimegeer et al., 2019; Rush et al., 2019). **Paper I** incorporated many widely advocated 'best practices' for content analysis, including:

- a coding frame containing multiple codes following an *a priori* structure driven by theory and formative exploratory research (Neuendorf, 2016);

- a formal coding protocol, piloted and coded by trained coders, kept updated throughout coding to ensure clarity (Lacy et al., 2015; Neuendorf, 2016);

- a search string designed iteratively to capture as many relevant articles as possible (Lacy et al., 2015);

- a sampling strategy consistent with the research aims (Riffe and Freitag, 1997; Newbold et al., 2002; Krippendorff, 2012; Lacy et al., 2015);

- double coding with a transparent approach to resolving disagreement (Lacy et al., 2015; Neuendorf, 2016);

- appropriate statistical testing of inter-rater agreement on each variable within a randomly-selected sub-sample (Riffe and Freitag, 1997; Lombard et al., 2002; Krippendorff, 2012; Lacy et al., 2015; Neuendorf, 2016); and

- clear, reproducible description of the research design (Neuman, 1997).

3.2. Challenges to the dominant paradigm in media research

While **Paper I** is robust by established standards of positivist content analysis, (e.g. Neuendorf, 2016) the principles underpinning that approach have been subject to criticism. Hall (1989) identified a *"sociological innocence"* (p.44) in communication research operating within the closed-off *"theoretical ideology"* (p.45) of positivist behavioural reductionism, which diminishes language and meaning *"in the name of a spurious 'scientism'"* (p.42). Fundamentally, Hall (1989) rejected any claims of research being value-neutral, transhistorical or operating at a historical endpoint of epistemological progress (Perry, 2002), stressing that communications researchers must acknowledge their historical and cultural contexts and the social, cultural political and economic structures in which the media are enmeshed. Krippendorff (2012) highlighted the subjective, contextually-bound processes of interpretation through which readers construct meaning, arguing that texts do not possess inherent, objective meanings to be revealed. Further, Krippendorff (2012) problematised reductive approaches by observing that the method by which content is encoded for analysis influences researchers' interpretations of that content.

Critical analyses of positivist media research have been lauded for exposing the naivety of strictly positivist approaches and criticised for failing to provide adequate solutions to

establishing truth when faced with competing interpretations (Cappella, 1989; Penman, 1992). Cappella (1989, p.140) went as far as to say that Hall *"calls into question the very possibility of communication"*. However, Hall (1989) stressed that useful research can be produced within problematic paradigms, and championed empiricism under the condition of sensitivity to values and context. Similarly, Franzosi (2008, p.xl) recommended that content analysts strive for rigor while maintaining awareness of limitations: *"engage in "science", but don't fool yourself into thinking that this will have solved the real issues of measuring meaning"*. Far from issuing critique without solutions, Krippendorff (2012, p.xxii) advocated specific practices to foster intersubjectivity and replicability, urging content analysts to *"explicate what we are doing and describe how we derive our judgement, so that others – especially our critics – can replicate our results"*, and developed a statistical measure of inter-rater reliability (De Swert, 2012).

Papers I, **II**, **IV**, **VI** and **VII**, with their sole focus on quantitative coding and analysis, are somewhat vulnerable to critiques related to the limitations of positivist approaches to communications research. This is most starkly evidenced in Paper I, the methods of which used an inherently reductive process to facilitate the production and analysis of a large quantitative dataset. The method involved diminishing the meaning of individual pieces of communication in exchange for robust quantitative analysis of high-level trends and frequencies of various aspects of framing. A more constructivist approach would have placed greater value on exploring the detail of specific aspects of framing. For example, **Paper I** compared the relative frequencies of biological, individual and societal solutions to obesity being mentioned within articles, but did not provide any insights into the nuances of how media coverage constructed different potential solutions within those categories. In contrast, a research design incorporating qualitative inquiry could have enabled analysis of different constructions of individual and societal solutions, including emergent constructions that may not be captured by a deductive approach. While subsequent submitted papers continued to draw from the quantitative methods established in **Paper I**, they increasingly integrated the strengths of inductive, qualitative analysis, either through mixed-methods approaches (**Papers III & VIII**), or through qualitative companion papers expanding upon aspects of their quantitative counterparts (**Papers IV** & **V**; **Papers V** & **VI**). The methodological developments within the body of work are discussed in the following section.

3.3. Methodological developments within the submitted papers

Paper I provided a robust methodological foundation upon which the subsequent submitted papers built. My research designs evolved, to varying degrees, in line with engagement with critiques of positivistic content analysis and my reflexive experience of the interpretative nature of encoding textual content. Key areas of methodological development within the submitted papers included: integration of latent content; deprecation of inferential statistics; and adoption of qualitative analysis. In **Paper I**, I sought to capture manifest content, defined as immutable, 'surface-level' meaning of content, sensitive to neither interpretation nor context (Downe-Wamboldt, 1992).

Subsequent submitted papers (**Papers III, IV, V** and **VIII**) incorporated coding of latent content, which refers to meanings constructed through interpretive, contextually-sensitive readings (Downe-Wamboldt, 1992). **Paper III** is cited in content analysis research as an exemplar of coding latent media content for thematic analysis (Robinson et al., 2018). As an example of coding latent content, **Paper IV** incorporated a measure of articles' supportiveness of minimum unit pricing for alcohol (MUP), which was identified as requiring latent coding through reading, interpretation and evaluation of each article's overall slant. My declining use of the concept of manifest content was consistent with Krippendorff's (2012, p.23) assertion that requiring absolute inter-rater agreement *"would restrict the empirical domain of content analysis to the most trivial"*. My experience of content analysis suggests that some risk of divergent interpretations must be accepted for coding to be of value. However, accepting subjectivity does not mean rejecting procedures to foster validity; the coding of supportiveness in **Paper IV** exhibited high inter-rater agreement, establishing intersubjectivity.

Another area of methodological development was progressively placing less value on inferential statistics. I came to recognise that, as statistical sophistication increases, so does the risk of losing nuance in the reduction of interpretatively-generated data to numerical data (Holsti, 1969). As with coding latent content, this development was gradual; **Papers II**, **III**, **IV**, **VI** and **VII** involve inferential statistics to some degree, but less so than the logistic regression models underpinning the headline findings of **Paper I**. For example, **Paper VIII** employs inferential statistics to model trends in the overall frequency of reporting, but the bulk of my quantitative analysis in the paper is descriptive.

The most fundamental methodological development was the introduction of qualitative (**Papers V** and **VII)** and mixed-methods (**Papers III** and **VIII**) content analysis. While some content analysis scholars reject qualitative content analysis (e.g.Neuendorf, 2016), the epistemological critiques outlined above have produced a more methodologically diverse field, drawing on positivism and constructivism. **Papers V** and **VII** focused on qualitative inquiry, with inductive coding and detailed thematic analyses grounded in excerpts of the original language. These papers were each conducted alongside quantitative counterparts (**Papers IV** and **VI**), exhibiting the value of combining both approaches to reach more complete understandings. The virtue of combining approaches is demonstrated most clearly in the mixed-methods designs of **Papers III** and **VIII**. In **Paper III**, I used quantitative analysis of a large sample to document the aggregate media frame, which informed the detailed qualitative analysis of one element of that frame. **Paper VIII** represents more organic integration of analyses, as both quantitative and qualitative analysis are presented alongside each other throughout the paper.

3.4. Reconciliation of antagonistic approaches in media analysis

My increased use of qualitative analysis mirrors the changing epistemological context within which content analysis became commonplace in health research, (Kline, 2006; Manganello and Blake, 2010). As Downe-Wamboldt (1992, p.313) suggested, *"content analysis methodology offers the opportunity to combine what are often thought to be antagonistic approaches to data analysis"*. Combining approaches enabled analysis of both overarching narratives and nuanced characteristics of narratives for more complete understandings (Macnamara, 2005, p.6). For example, **Paper VI** comprised quantitative analysis of framing within a large, representative sample of articles about second-hand smoke (SHS) and children, and **Paper VII** comprised qualitative analysis of arguments attributed to policy actors and the public. On a conceptual level, integrating the quantitative approach of a positivist epistemology with the qualitative approach of a critical paradigm may be a means of integrating diverse research goals, for example **Paper III's** examination of both health communication and social justice concerns (see section 4.2).

The re-emergence (Morgan, 1993) of qualitative inquiry in content analysis coincides with advances in quantitative approaches. Computer-aided methods now go beyond crude counting of words (Franzosi, 2008; Skalski, 2016), harnessing techniques from computer science to algorithmically analyse text with sensitivity to linguistic context and the

meanings that may be constructed by relationships between words or phrases (De Graaf and van der Vossen, 2013). Zolnoori and colleagues' (2019) used data mining techniques to analyse more than three million news articles; by comparison, **Paper I's** sample of 2,414 articles is unusually large for manual content analysis. Zolnoori and colleagues (2019) cited **Paper III** as an example of *'traditional'* content analysis, both resource-intensive and limited by human subjectivity. While the research is impressive, the findings, which comprise frequencies of reporting on specific topics and the sentiments of text within topics, do not compellingly address 'limitations' of manual methods, and give no indication that detailed qualitative frame analysis (such as **Paper IV**) is close to being automated. As Conway (2006) suggests, computer-aided content analysis involves trading scale for complexity of analysis, but combining different approaches represents a valuable option (De Graaf and van der Vossen, 2013; Lewis et al., 2013; Chakrabarti and Frye, 2017).

4. Media content analysis and health policy: context and contributions

4.1. Policy theory and the media

4.1.1. An overview of policy theory

Media studies' rejection of reductive positivism in favour of constructivism (section 3.2), is mirrored by a shift within policy studies towards recognition of policy as socially constructed (Koon et al., 2016). Early policy theory, such as Lasswell's (1956) decision process model (Ronit and Porter, 2015), was characterised by linearity, reductionism and assumptions of rationality (Petracca, 1991; Cairney, 2012b). In contemporary policy studies, rationalist models are widely criticised as simplistic, structurally biased, founded on false assumptions and insufficiently predictive (Petracca, 1991; Everett, 2003; Cairney, 2012b; Ronit and Porter, 2015), particularly within public health policy (Smith and Katikireddi, 2013) and politically volatile debates (Ritter and Bammer, 2010). Rationalist models were largely supplanted by models based on bounded rationality (Jones, 2002) and non-linear incremental decision making within institutional and contextual constraints (Lindblom, 1979).

Contemporary policy theory is influenced by complexity theory (Smith and Joyce, 2012), understanding policy processes as indivisible complex systems, difficult to predict, control and understand (Geyer and Rihani, 2010; Cairney, 2012a). Stevens and Zampini (2018) suggest that influences on policy are so complex that rendering them as two-dimensional and static is insufficient. No policy theory is comprehensively explanatory or predictive of policy processes or perfectly transferrable across legislative contexts or analytical purposes (Bridgman and Davis, 2003; Parkhurst, 2017). Rather, policy theory represents a range of tools to be used and combined selectively (Sabatier and Weible, 2007; Weible and Cairney, 2018).

4.1.2. The role of mass media and content analysis in theories of policy

Given the submitted papers' explicit linkage of news media content to policy, it is valuable to understand the role of mass media in leading policy models. Howland and colleagues (2006) observed that literature offers little formal linkage of media content analysis and policy theory, despite their shared roots in Lasswell's work (1956; 1965) and content analysis' contributions to policy theory. Public and political agenda setting is key to many models of policymaking (Kingdon and Thurber, 1984; Baumgartner and Jones, 2010; Smith and Katikireddi, 2013), and policymakers perceive media coverage of policy debates

as predictive of public attitudes (Jerit, 2008). Mass media plays a role, explicitly or implicitly, in each of the leading policy process models (Shanahan et al., 2008).

Agenda setting is key to Kingdon's (1984) foundational multiple streams analysis (MSA), which supplants the ordered rationality of linear models with 'organised anarchy' (Durant and Diehl, 1989). Establishing issues and solutions on the agenda is a prerequisite for 'policy windows' to open, and 'policy entrepreneurs' can play key roles in setting that agenda (Kingdon and Thurber, 1984; Cairney, 2018). Mass media have a role in both setting public and policy agendas and amplifying policy actors. However, Kingdon characterised media's role as that of a conduit for agendas already established within legislatures, rather than a novel source of agendas (Kingdon and Thurber, 1984; Shanahan et al., 2008).

The role of mass media is more developed in two other leading policy theories: punctuated equilibrium theory and the advocacy coalition framework (ACF). Punctuated equilibrium seeks to explain why policy processes are characterised by lengthy periods of stasis or incremental change, punctuated by occasional large-scale change (True et al., 1999). The ACF concerns the role of policy networks - diverse coalitions of actors who share a position on a policy topic - in maintaining and changing policy (Sabatier, 1988; Smith and Katikireddi, 2013). In both punctuated equilibrium theory and ACF, mass media act both as conduit and policy actor; media content reflects arguments within policy subsystems (Baumgartner and Jones, 2010) and informs external influences on coalitions (Cairney, 2012b), but can also be a source of 'political input' or a part of a coalition (Jenkins-Smith and Sabatier, 1994; Baumgartner et al., 2009).

These leading theories of policy change can be characterised as positivist approaches to modelling socially-constructed policy processes (Fischer, 2003; Jones and McBeth, 2010; Koon et al., 2016). In contrast, constructivist approaches have emerged that view policy processes as "*a continuing discursive struggle over the problem definitions and framings of policy problems*" (Fischer and Gottweis, 2013, p.429). The narrative policy framework (NPF) bridges positivist and constructivist approaches by providing an empirical approach to understanding socially-constructed narratives (Jones and McBeth, 2010). The NPF provides a framework for analysing the persuasiveness of narratives, or 'stories', constructed by policymakers, which Shanahan and colleagues' (2018) conceptualise as comprising four core elements of setting, characters, plot and moral. The structure of such

policy stories is reminiscent of framing theories, such as Entman's (1993) four aspects of frames. Indeed, the differences between framing and narrative have often been unclear within the literature (Jones and McBeth, 2010; Olsen, 2014; Shanahan et al., 2018).

4.1.3. The relevance of policy theory to the submitted papers

In punctuated equilibrium, as in agenda setting theory (McCombs and Shaw, 1972), elevated media attention correlates with an issue's position on the policy agenda, as external pressures cause issues to move from silos of policy systems into policy venues where they are more exposed and less controlled (Baumgartner and Jones, 1991). Similarly, the prominence of an issue within the media, and therefore the policy agenda, has relevance to MSA, in which an issue's high prominence on the policy agenda is one of the necessary requirements for the opening of a policy window. These concepts are consistent with my observations in **Papers VI** and **IV** that heightened media attention preceded legislative action (see section 5.1).

In addition to agenda setting, framing is a key concept within punctuated equilibrium theory, and the concept of a 'policy image' is analogous to a frame (Baumgartner and Jones, 1991; Cairney, 2012b). If policy is, in practice, based more on ideas than evidence (Smith, 2013), theories of how ideas are packaged, such as framing, are of particular value (Koon et al., 2016). As the submitted papers each study media framing of a topic or policy, these concepts are highly relevant to each of the submitted papers. For example, In **Paper VII**, I engaged specifically with the concept of the importance of frames as packages of ideas, finding that tobacco industry voices drew from a relatively limited range of arguments which were countered effectively by more comprehensive packages of ideas favouring policy intervention.

Advocacy Coalition Framework (Sabatier, 1988) is particularly relevant to contextualising my analyses of stakeholder engagement in policy debates, given the centrality of coalitions of actors with shared values, and importance of the balance of power between coalitions in trying to shape policy outcomes. For example, ACF underlines the potential significance of the fracturing of the long-established tobacco control coalition (Princen, 2007; Weishaar et al., 2015) in the e-cigarette regulation debate, identified in **Paper VIII**. Further, the argument I advanced in **Paper VIII** that additional evidence is unlikely to progress the debate due to entrenched belief systems is consistent with ACF (Jenkins-Smith, 1988). Actor coalition framework reinforces the value of understanding media framing of policy

debates, as it identifies how actors may use strategic narrative and framing to strengthen and weaken coalitions, influencing policy outcomes (Sabatier, 1988). Consistent with this, **Paper VIII** highlights the risk of disagreements within the tobacco control community over e-cigarette regulation being exploited by industry actors with an interest in undermining the authority of tobacco control coalitions.

Given the conceptual territory shared by narrative and framing, NPF has relevance to the framing research presented in the submitted papers. Olsen (2014) argues that these concepts can complement each other as frames 'make narratives coherent' and narratives 'substantiate frames' (p. 249). Within NPF, media narratives have two-way relationships with societal discourses (Jones and McBeth, 2010), which is consistent with an assumption that media content reflects social narratives. This is relevant to each of the submitted papers, but most overtly **Papers II** and **III**. For example, **Paper III** examines problematic media narratives around women's single-episodic drinking which, I argue, both reflect cultural constructions and may serve to reproduce those constructions. Conceptually, NPF is consistent with the epistemological development within the submitted papers (section 3.3) in its integration of social constructivism and empiricism. Another aspect of NPF that has relevance to the submitted works is in conceptualisations of frames as active, purposefully strategic 'weapons of advocacy' (Weiss, 1989; Schön and Rein, 1994; Hawkins and Holden, 2013). This concept is consistent with the assumptions underpinning **Papers IV-VIII** that policy actors intentionally construct frames to influence debates (see section 5.1)

It is clear that policy theorists broadly attribute mass media with a role in policy processes, but the extent to which that role is active or passive is ambiguous. Shanahan and colleagues (2008) identified that policy research has predominantly focused on the media as a conduit, but argue evidence that the media acts as a policy 'actor' in itself. As Jerit (2008) observed, policymakers will tailor public statements based on the anticipated reactions of journalists, suggesting that journalists shape policy discourse rather than impassively transmitting it. The submitted papers recognise both media's role as a conduit for policy actors and mass media's position as an actor itself. At one extreme **Paper VIII** focuses entirely on the positions of policy actors in an e-cigarette regulation debate as represented within the media, consistent with the constructions of the media's role in policy as being a conduit. In contrast, **Paper III** is concerned with how mainstream print and online news sources themselves represent a determinant of cultural understandings

about single-episodic drinking that may influence public reception of governmental alcohol policy.

4.2. Evidence-based policymaking, public health and commercial interests

Consistent with the rejection of comprehensive rationality in policy is the problematisation of evidence-based policymaking; within complex, imperfectly-rational, value-laden (Smith and Katikireddi, 2013) policy systems, evidence-based policymaking is unachievable (Cairney, 2016). In **Paper VIII** I directly confronted discursive obstacles to evidence-based policymaking, questioning the implication, repeatedly advanced by both 'sides' of the e-cigarette regulation debate, that additional evidence will reveal the correct regulatory path. I argued that emerging evidence is filtered through the values of two opposing frameworks of public health - harm reduction and the precautionary principle - and is therefore unlikely to resolve policy controversy without public health actors confronting the values of those frameworks. Contemporaneous work by Fairchild and Bayer (2015) and Labonté and Lenchucha (2015) also highlighted the need for balance between precaution and harm reduction in e-cigarette regulation, and similar heterogeneity of values among public health actors has been identified in drug policy debates (Zampini, 2018) and immunisation promotion (Stephenson et al., 2018).

Just as positivist empiricism has been subject to criticism in its application to social science, the application of the values of evidence-based medicine to policymaking has been questioned robustly by constructivist and critical theorists (Fischer, 1998; Greenhalgh and Russell, 2009). From constructivist and critical perspectives, the objective, rational processing of evidence is unachievable, and the subjective translation of evidence into policy is subverted by both power imbalances and ideologies embodied within policymaking institutions (Hall, 1993) and technical limitations in institutions' gathering and appraisal of evidence (Lomas and Brown, 2009; Stevens, 2011; Parkhurst, 2017). Weiss (1983) theorised that policy is determined by ideology, interests and information, each determined by the distribution of power. Stevens and Zampini argued that the narrative of evidence-based policymaking obscures the role of policy processes in reproducing societal power imbalances through *'systematically distorted'* communication (Stevens, 2011; Stevens and Zampini, 2018, p.62).

In the submitted papers, I have aimed to facilitate the adoption of policy that is informed by evidence, but not to support the narrative of evidence-based policymaking, with its

assumption that evidence-based policy can be reliably arrived at through rational, objective processing of evidence. When considering the relationship between evidence and policy, it is vital to acknowledge that the evidence bases supporting health policies are inherently limited in their comprehensiveness, conclusiveness and relevance to specific policies and contexts. As such, interpreting available evidence and applying it to a policy problem is an inherently subjective process that demands engagement with scientific uncertainty and the gulf between scientific evidence and social systems (Greenhalgh and Russell, 2009).

Arguably, studying policy communication is tacit rejection of evidence-based policymaking; it is precisely because strictly rational implementation of evidence-based policymaking is unachievable that message framing has a role in policy. Like technology moguls' aspirations to 'framelessness' (Andrejevic, 2018), the discourse of evidence-based policy trades in objectivity (Greenhalgh and Russell, 2009). In practice, policy is made through the contestation of ideas (Stone, 2002; Smith, 2013), not by uncovering objective truth from a body of evidence (Wood et al., 1998), and understanding message framing is crucial to health policy advocacy (Dorfman et al., 2005; Dorfman and Krasnow, 2014; Katikireddi et al., 2014; Weishaar et al., 2016).

In addition to evidence-based health policy, it is worth reflecting critically on the narrative of public health. Public health has built upon earlier focuses on sanitation and downstream, individual-level risk factors with acknowledgement of the upstream, social determinants of ill-health (Dew, 2012). This 'new public health' incorporates values of social justice, equity, sustainability and participation, and complements the existing biomedical model with analytical frameworks from the social sciences (Beauchamp, 1976; Wallack and Dorfman, 1996; Dew, 2012). As a field dedicated to collective change, public health is inherently political, but the new public health has escalated that politicisation by expanding responsibility for health to all sectors of society (Dew, 2012). Much like mass media, public trust in public health is in decline, and these two trends compound each other (Cummings, 2014). Some sociological critiques characterise public health as coercive, paternalistic, moralising and restrictive, making us 'docile' (Ryan, 2005) and representing a force to be resisted (Fox, 1998). Just as communications research can been seen as constrained within a liberal pluralist positivism (Hall, 1989), the same paradigmatic values can be seen as constraining public health as a discipline (Lupton, 1995). Conversely, Dew (2012) argues that public health offers a means of resisting the dominant discourses of consumption and individualism, to which the marketers of unhealthy commodities

encourage obedience. Durkheim predicted that a new 'cult of man' would come to replace the role of religion in society, and Dew (2012) argues that public health, as both a source of moral and scientific authority, has come to occupy that role. Hastings (2015) argues that, rather than fight those forces with competing appeals for obedience, public health should instead encourage disobedience towards harmful consumption.

Possible tensions between different goals of public health are explored in **Paper II**, in which I examined newspaper images of obesity, a health topic whose conceptualisation within biomedical public health discourse has been robustly criticised (Gard and Wright, 2005). **Paper II** demonstrates how media content might both normalise and stigmatise obesity. The 'old' public health may have prioritised the former, perhaps reasoning from a utilitarian (Hann and Peckham, 2010) perspective that stigma may drive individual behaviour change. However, research suggests that weight stigma has the opposite function (Ashmore et al., 2008; Jackson et al., 2012) and threatens mental wellbeing (Puhl and Heuer, 2009). From the 'new' public health perspective, integrating health promotion and social justice, both outcomes are undesirable. Similarly, **Paper III** demonstrated how media representations of gender in single-episodic drinking both misrepresented risks and reproduced social stigma. Again, these representations are undesirable for both 'old' and 'new' forms of public health. Together, these papers illustrate the need for nuance in harnessing mass media as a health communication tool, as raising awareness may come at a cost to social justice, and within new public health the ends may not justify the means (Hann and Peckham, 2010; Dew, 2012).

The new public health recognised conflict between market justice and social justice (Beauchamp, 1976) and the pernicious role of the commercial determinants of health (CDoH) (Kickbusch et al., 2016), which play critical roles in each of the health issues examined in the submitted papers. The CDoH comprise unhealthy commodity industries (UCI), including corporations that produce and market alcohol, tobacco and soft drinks and foods high in fat, salt and sugar (HFSS) (Stuckler et al., 2012). These industries have repeatedly demonstrated the motivation and capability to undermine effective health policymaking (Freudenberg and Galea, 2008; Babor, 2009; Jernigan, 2012; McCambridge et al., 2013; Moodie et al., 2013; Freudenberg, 2014; Savell et al., 2014; Petticrew et al., 2016; Savell et al., 2016; Knai et al., 2018). Unhealthy commodity industry lobbying through media engagement represents one aspect of the CDoH (Freeman and Sindall,

2019), along with other forms of lobbying, marketing activities, corporate social responsibility activities and supply chains (Kickbusch et al., 2016).

The drivers of commercially-driven non-communicable disease are complex (Knai et al., 2018), and their opposition demands comprehensive strategies (Freudenberg and Galea, 2008) and interdisciplinary collaboration. The concept of the CDoH provides a platform for that collaboration (Kickbusch et al., 2016). Many researchers warn that, in embracing interdisciplinary and multisectoral action, corporations should have no role in developing health policy, and cannot be permitted to replace health policy with ineffective voluntary measures (Moodie et al., 2013; Brown, 2015; Maani Hessari et al., 2019). However, others argue for partnering with industry (e.g. Acharya et al., 2011), and indeed legislatures in the UK predominantly do not exclude voices of business from health policymaking (McCambridge et al., 2013). Beyond UCIs, mass media could be characterised as a commercial determinant of health , as declining journalistic standards and commercial pressures (Fenton, 2010; Henderson and Hilton, 2018) may hamper media actors' willingness or ability to resist pressure from powerful UCIs.

McKee and Stuckler (2018) conceptualised 'defining the narrative', through mass media or otherwise (Hawkins and Holden, 2013), as one of four ways corporations influence health. Theme II of the submitted papers contributes to this cause by shedding light on industry's attempts to use news media to shape policy narratives. The submitted papers form part of a growing global literature documenting an industry 'playbook', including media engagement strategies, shared across jurisdictions, industries and categories of commodity (Kessler, 2001; Brownell and Warner, 2009; Wiist, 2011; Jernigan, 2012; Stuckler et al., 2012; Hawkins and Holden, 2013; Savell et al., 2014; Petticrew et al., 2016; Savell et al., 2016; Petticrew et al., 2017; Douglas et al., 2018; Knai et al., 2018; Hilton et al., 2019). Producing evidence of common corporate tactics both works towards McKee and Stuckler's (2018) goal of exposing corporate control and can prepare public health actors to engage industry in future debates. Given that corporate actors transfer tactics between issues, policies and legislatures, evidence-driven recommendations for policy advocacy should aspire to transferability, albeit within the limitations imposed by the complexity of policy processes (Cairney, 2012a). In **Papers I, IV** and **VI** I drew on analysis of representations of obesity, alcohol and smoke-free policy to contribute to theory about the discursive power of constructing children as an affected, powerless and sympathetic target of health policy (Schneider and Ingram, 1993).

4.3. Advocacy and positionality

Conducting policy research and making recommendations for policy advocacy raises issues about the advocacy role of the researcher. Invoking the 'public health community' (e.g. **Paper VIII**) implicitly aligns researchers with actors in overt advocacy roles. Indeed, academics often perform 'representational' (Carlisle, 2000) advocacy roles within the policy debates that I study, promoting policies alongside other actors. Academic institutions' current prioritisation of research impact may incentivise advocacy over impartiality (Smith and Stewart, 2017), and the history of public health policy illustrates the value of researchers taking an advocacy role, (Chapman, 2008), albeit with some hesitation (Smith and Stewart, 2017). Choosing between impartiality and advocacy is not straightforward, and many activities exist between the two extremes of a continuum of dissemination and advocacy (Smith and Stewart, 2017), and simply performing research that documents corporate opposition to health policy can be a form of advocacy (McKee et al., 2005). While I do not actively claim an advocacy role, I accept that, in policy research, opting out is not an option.

Consistent with a commitment to acknowledging the value-laden nature of social science is a belief in identifying one's positionality within the social and political context of the topic studied (Walt et al., 2008). A key aspect of positionality is whether the researcher occupies the role of an insider or outsider with respect to the topic (Rowe, 2014). Having collaborated with non-academic policy actors, and disseminated my research in mass media, I must identify myself as an insider to some extent. Aligning myself with public health is eased by the concept of the CDoH, and the understanding that the discursive playing field favours commercial interests. As Wallack and Dorfman suggest (1996), directly opposing the CDoH is consistent with the concept of 'new public health'.

In broad terms, I am predominantly supportive of the narrative of public health, and discomfort with its paternalistic instincts (Buchanan, 2008) is outweighed by my scepticism of individual-level solutions to structurally-driven problems. I am enthusiastic about evidence-informed policy, if not evidence-based policymaking, and sceptical of the motives of UCIs and their various representatives in politics, think tanks and astroturfing. However, these beliefs do not translate to uniform support for the public health policies whose construction I study: my attitudes to the policies studied in the submitted papers range from approximate neutrality to cautious optimism to unreserved enthusiasm. Each policy is vulnerable to legitimate criticism.

My attitudes to policies studied have at times differed from those of my co-authors, though never in a manner that consciously biased my research conduct. As well as one's own positionality, it is worth considering that of collaborators. In collaborating with the chief executive of a health charity on **Papers VI** and **VII** I had to recognise the limitations of my co-author's impartiality, and the inherent cost to the perceived impartiality of the research. In this case, the team's approach was for the researchers to conduct the research itself, and for our third-sector collaborator to contribute by identifying the need for the research, providing contextual knowledge and guiding dissemination. In addition to advocates engaged in research, I have collaborated with researchers with advocacy roles; a recent content analysis collaboration with Professor Simon Capewell involved coding multiple quotations of my co-author within the data (Hilton et al., 2019). While this did not affect the conduct of the research, it ensured that any vestigial illusion of detached objectivity was removed.

A concern inherent to collaborating with co-authors is representation; to what extent do the conclusions represent my unfettered interpretations? While I have published papers where the design, conclusions or interpretation represented a pragmatic compromise, the papers selected for submission here comprise work in which the content is consistent with my own perspectives. This has been possible due to working with generous senior colleagues who show faith in more junior researchers to steer research, and open, communicative research practices in which alternative interpretations are incorporated into papers instead of being suppressed in favour of a single interpretation.

5. Discussion

5.1. Contributions to knowledge

The methodological and theoretical strengths of the submitted papers facilitated the generation of both scholarly and pragmatic knowledge for public health, including both subject-specific knowledge and learning that transcends individual health topics. The body of work performs descriptive, evaluative and prescriptive roles, documenting media content, analysing potentially important aspects of framing, and making recommendations for practice that are relevant to a wide range of actors engaged in communicating about health and health policy.

The submitted papers' key novel contributions to knowledge are discussed in this section, illustrated by specific examples. These contributions include: documenting media frames; analysing trends within media frames; documenting stakeholders' engagement in media debates; highlighting the strategic importance of defining target groups; identifying areas for improvement in media health communication; identifying the need for a social justice approach to health communication; and identifying the need to engage with the values of public health.

The submitted papers represent the first content analyses of UK media representations of the topics covered, documenting how health issues (**Theme I**) and policies (**Theme II**) were represented in UK newspapers and online news. Many of the submitted papers documented how aggregate media frames evolved over time. Illustrating this, **Papers I** documented framing of obesity, its drivers and its potential solutions across 15 years of UK newspaper coverage. My analysis demonstrated both a precipitous rise in the issue's media presence and a statistically significant shift from individual to societal framing. This provides evidence of the strengthening of the narrative foundations for population-level obesity policy, which could embolden policymakers, as public support for policy interventions is can grow in line with media framing. In other papers, my analyses of trends within media salience and frames informed predictions about future media framing of different health topics and policies. For example, **Papers VI** and **IV** demonstrated linear increases in media salience of policy topics in the months or years preceding influential policy debate events. Further, **Paper VI** identified that, while media coverage of the prohibition of smoking in vehicles carrying children was predominantly supportive of the measure, a large surge in opposition arguments coincided with a parliamentary vote on the

legislation. These findings led me to recommend that public health actors should be prepared to counter strategic surges in opposition ahead of legislative events.

In addition to documenting aggregate media representation of issues, the submitted works examined how different stakeholders promoted specific frames in their engagement in media debates around public health policy (**Theme II**). **Papers IV** and **V** demonstrated how different stakeholders participated in a media debate around MUP that was predominantly favourable towards the policy. The debate was effectively dominated by evidence and public health voices with legitimate expertise, while industry voices were relatively absent. These papers contributed to growing international literature recognising that framing alcohol as causing secondary harms beyond those to the drinker may be crucial in policy advocacy (Parackal and Parackal, 2017), as it has been in smoke-free policymaking (Clemons et al., 2012). This lesson might be applied to other public health policy concerns, such as gambling (Langham et al., 2015). Smoke-free legislation was the focus of **Papers VI** and **VII**, which documented a media frame predominantly supportive of protecting children from SHS in vehicles, with advocates presenting the policy as a vital solution to a serious problem, and one that was likely receive public support. These papers produced recommendations for advocacy, such highlighting the success of prior legislation in promoting changes in attitudes, norms and behaviours. **Paper VIII** maps different stakeholder categories by their presented supportiveness of different aspects of e-cigarette regulation. In doing so, I identified specific areas of agreement and disagreement between groups of stakeholders that have traditionally been allied in smoke-free policy advocacy, and suggested that advocates may benefit from avoiding areas of disagreement that corporate interests may use to undermine the case for any regulation.

A key recommendation for practice that emerged from my analyses of MUP and SHS debates was that advocates should be aware of the potential discursive power of positioning specific social groups as being affected by the problem targeted by a policy. Drawing on Schneider and Ingram's (1993) analysis of social construction of target populations in policymaking, I argued that positioning children (as a group constructed as powerless and sympathetic) as the target of policy may engender public support for a top-down intervention. In **Papers IV** and **V** I identified that the media frequently associated children and youths with alcohol problems, but that advocates could have done more, as family was a relatively infrequently mentioned aspect of alcohol's secondary harms. In **Papers VI** and **VII,** I identified that children and foetuses were frequently characterised as

victims of SHS, and argued that the tobacco industry's relatively low profile in the debate was likely due to unwillingness to be seen as opposing the "invincibly powerful sub-text" (Freeman et al., 2008) of child protection. I also concluded that policy advocates could have found further success by highlighting children's heightened physiological vulnerability to SHS. In **Paper I** I argued that portraying obesity as a problem affecting children could drive public support for population-level policy. This transferrable evidence, triangulated across different topics, suggests that child protection has the potential to disrupt discursive stalemates between structural determinants and individual freedoms.

As well as generating lessons from analysis of debates that played out in favour of public health, the submitted papers analysed less favourable representations, highlighting opportunities for improvement. In **Paper II** I analysed text and images from newspaper articles about obesity to illustrate how media representations may contribute to both the normalisation and stigmatisation of obesity. Similarly, **Paper III** documents how media representations of single-episodic drinking both reproduce harmful gender stereotypes and misrepresent the demographics of alcohol harms proportionately. The evidence from these papers underlines the need for media producers, and public health actors who engage with the media, to take steps to improve both the accuracy and social responsibility of representations of health issues. A practical application of media content analysis in addressing such shortcomings is in informing the production of resources to assist communication, such as American guidelines for reporting on obesity, which cite **Paper I** in their creation (Rudd Center For Food Policy & Obesity, 2013).

Both **Paper II** and **Paper III** reinforce the need for an approach to the communication of health issues and policies that is consistent with the values of the new public health (Wallack and Dorfman, 1996), wherein communicating risk to modify public behaviours and acceptance of policy solutions does not exacerbate social inequalities, stereotypes and stigma. The narrative of public health is also questioned in **Paper VIII**, in which I highlight a need for public health stakeholders to negotiate the competing values of harm reduction and precaution, as their conflict is unlikely to be addressed by a reliance on the development of new evidence and the narrative of evidence based policymaking.

5.2. Limitations and strengths of content analysis and the submitted papers

The contributions of the submitted papers should be considered in light of their methodological strengths and weaknesses, some of which are inherent to media content analysis. These weaknesses include: a narrow focus on newspapers and news content; an inability to disentangle the journalistic processes from policy actors' positions; uncertainty of framing effects; and limitations of transferability.

Excluding my analysis of BBC News website content in **Paper III**, the content analysed in the submitted papers originated in newspapers. Newspaper content is used frequently in content analysis (Riffe and Freitag, 1997; Manganello and Blake, 2010). However, as outlined in section 2.4, newspapers have ceded market share and influence to other forms of media (Press Gazette, 2018), and media researchers must expand sampling frames beyond newspapers to accurately represent mainstream news media. While analysing newspaper content affords the apparent methodological luxury of online newspaper databases, with the promise that *"classic problems of validity and reliability are attenuated or even eliminated"* (Snider and Janda, 1998, p.4), in reality such databases are neither comprehensive in their coverage nor consistent in their presentation (Snider and Janda, 1998; Hansen, 2003; Neuendorf, 2016). Beyond simply studying the online equivalents of newspapers, research must engage with social media, user-generated content and influencer marketing, particularly given the opportunities these emergent forms offer the marketers of unhealthy commodities (Gupta et al., 2018; McKee and Stuckler, 2018). In section 5.3 I discuss my use of online media in current research.

Beyond simply shifting focus from newspaper news to online news, non-news media also constitute sites of health communication. For example, entertainment media communicate health information and norms (e.g. Primack et al., 2008; Henderson, 2018). Content analysis has been successfully applied to magazines (Evans et al., 1991; Baker, 2005), websites (Borzekowski et al., 2010; Grana and Ling, 2014), television (Greenberg et al., 2003; Fogarty and Chapman, 2012), video games (Dill et al., 2005; Martins et al., 2009), online videos (Yoo and Kim, 2012; Puhl et al., 2013), advertising (Döring and Pöschl, 2006; Robinson and Hunter, 2008) and books (Taylor, 2003; Herbozo et al., 2004). The variety of media to which content analysis has been applied does not devalue the analysis of news media, rather it illustrates that content analysis of any one element of public communication is necessarily limited, and that incorporating multiple elements may be valuable (Lawrence, 2004).

Analysing multiple content sources may be particularly valuable in the study of policy debates. The exclusion of discourse on social media and in legislative and governmental settings in **Papers IV-VIII** constrains analysis to a single element of a multi-site public debate, and evidence suggests that policy actors' messages vary between these venues (Jerit, 2008; Katikireddi and Hilton, 2015). Anecdotally, I found that public health actors' private conversations about restricting smoking in private vehicles carrying children differed in tone from their engagement with media (**Papers VI** and **VII**). This experience reinforces the difference in discourses between venues, and highlights the limitations of solely analysing one. While news content can grant a degree of 'backstage' access (Wodak and Meyer, 2009) to the 'black box' (Waddell et al., 2005) of institutional policy processes, a more holistic study of debates can only enhance understandings.

The use of media framing research to understand policy advocacy is complicated by the role of media gatekeepers in transmitting advocates' positions. Measurements of actors' positions may be confounded by journalists' misinterpretation, misattribution or miscontextualisation, intentional or otherwise, of actors' stances. For example, in **Paper VIII** I aimed to examine nuance within e-cigarette regulation debate by differentiating generic 'supportive' and 'unsupportive' coalitions by their stances on specific policy options, but doing so is inherently constrained by the extent to which positions are unmeasurably distorted in the news production process. The processes by which journalists select, filter and interpret policy actors' statements occur within the commercially-constrained processes of increasingly under-resourced journalistic practice. Henderson and Hilton (2018) call for a research agenda that addresses the mechanics of media production, arguing that improving understandings of those processes would add substantial value to recommendations derived from content analysis. Further, it is important not to place such great value on formulating persuasive arguments that we ignore the role of power in determining policy outcomes (Richardson, 1996).

More profound issues limit the use of media framing research to inform policy advocacy. Firstly, the difficulties of predicting frame effects are such that recommendations for advocacy practice are inherently limited, as media content analysis alone cannot identify causation (Burton, 2004). Secondly, while I present frame analysis as a source of transferable insights for advocacy, that transferability is complicated by the unique complexities of the specific contexts within which each policy debate occurs. These two limitations can be encapsulated within one example: **Papers IV** and **VI** draw conclusions

about the discursive power of framing a problem as harming children, and I present this as potentially a valuable, transferrable lesson for policy advocacy. However, this recommendation cannot be conclusive because, firstly, the method cannot produce causal evidence of a frame effect, and, secondly, assumptions about transferability are limited by variation between complex systems. Recommendations for advocacy practice inferred from content analysis may usefully contribute to the development of strategy, but are not definitive in themselves.

Finally, content analysis is inherently reductive, as the fullness of meanings are necessarily pared down to be operationalised for analysis (Hall, 1989). I argue that even constructivist approaches, which disavow reductive positivism, inescapably reduce the detail of the source material in the process of interpretation, coding and analysis. At best, researchers can mitigate the impacts of these diminishments of meaning through maintaining an awareness of them in their practice while using research designs that strive for rigorous intersubjectivity within constructivist limitations (see section 3.2) (Krippendorff, 2012).

These limitations should be considered in light of strengths. As well as considering the methodological strengths of the submitted works (sections 2.2, 3.1, 3.3 and 3.4), general strengths of content analysis methods should be considered. Media content analysis, when conducted well, is a robust (Neuendorf, 2016), systematic (Berelson, 1952; Stone et al., 1966; Neuendorf, 2016), cost-effective (Lac, 2016), unobtrusive (Krippendorff, 2012) means of extracting value from abundant data from a broad range of often publicly-available sources (Kolbe and Burnett, 1991; Neuman, 1997; Macnamara, 2005). Unlike data generated for research purposes, content analysis data *"preserves the conceptions of the data's sources"* (Krippendorff, 2012, p.41), not being abstracted by any research process prior to the researcher's application of their chosen analytical frame. This is in contrast to, for example, interview data, which is produced within, and inherently affected by, the research process (Griffin, 2007). Structured approaches to transforming unstructured matter into data allow multiple coders to work simultaneously to encode large corpora while retaining intersubjectivity (Krippendorff, 2012), as exemplified in **Paper I**. This structured use of secondary material also enables the analysis of changing frames over time, as in **Papers I**, **IV** and **VI**.

Content analysis is a valuable comparative tool. Applying analytical frameworks across topics can generate understandings that transcend individual topics (Stevenson, 1992;

Henderson and Hilton, 2018), as illustrated in my observations about identifying children as affected groups in **Papers I, IV** and **VI**. Similarly, Kim and colleagues' (2017a) comparison of the findings of **Paper VIII** with content analysis of South Korean and American content illustrates the value of media content analysis in comparing the same policy area across different legislative environments. Further, the integration of findings from **Papers IV** and **V** with consultation responses and interviews (Katikireddi and Hilton, 2015) illustrates the comparative value of media content analysis alongside other sources and methods. Content analysis methods can be integrated alongside other methods in other ways, for example to inform evaluations (Kesten et al., 2014; Katikireddi et al., 2019) or the design of interventions such as communication campaigns and reporting guidelines (Rudd Center For Food Policy & Obesity, 2013). By combining content analysis with other methods, findings can be triangulated and conclusions can therefore be more confident (Oleinik, 2015).

Central to the submitted papers is the utility of media content analysis in understanding how health policy issues are represented and debated, and therefore making inferences for improved health policy advocacy. Research has identified the value of content analysis in documenting discursive tactics to inform policy advocates' message framing (Dorfman, 2003; Dorfman et al., 2005; Weishaar et al., 2016), potentially breaking long-term policy debate stalemates (Koon et al., 2016). Papers **IV-VIII** contribute to a growing literature on such argumentation (see section 4.2) by providing analysis of discourse about alcohol, tobacco and e-cigarette policy, and producing recommendations for practice that transcend those individual topics. While these recommendations are not definitive, as discussed above, they represent plausible pathways to influence that policy actors can take under advisement in planning communications. The policy value of the insights presented in the submitted papers is demonstrated in their application to policy and practice and in my collaborations with advocacy professionals and researcher-advocates.

While content analysis has inherent limitations, I have demonstrated how the method, when applied rigorously and conscientiously, can provide valuable understandings of how media content reflects and might influence societal discourses. Further, when applied to policy debates, I have demonstrated how the method can produce valuable, if not definitive, recommendations for advocacy practice. Despite the methodological challenges and constraints of media content analysis, the role of mass media in constructing society (sections 2 and 4.1) is such that analysing media content is essential.

5.3. Present and future research

Since publishing the submitted papers I have built upon their contributions by further expanding on their contributions to knowledge, and developed my methods by integrating online news and social media content.

As identified in section 5.2, a strength of content analysis is its use as a comparative research tool. I have built upon my analyses of media representations of obesity (**Papers I** and **II)** with analyses of newspaper representations of obesity in children in UK (Nimegeer et al., 2019) and Swedish (van Hooft et al., 2018) newspapers. This research further highlights the value of content analysis as a comparative method, as my consistent analytic approach between projects has enabled comparison of representations of general obesity with childhood obesity, and international comparison of representations of childhood obesity in two countries.

Building upon my use of online news content alongside newspaper content in **Paper III**, I am collaborating on an analysis of UK online news media representations of the global Zika outbreak. The project uses a mixed-methods design to document the content of both articles and reader comments, with particular focus on the types of evidence invoked, and the geographical locations of cited experts. The online environment offers methodological challenges, as flexible and reproducible (albeit flawed (Snider and Janda, 1998; Hansen, 2003; Neuendorf, 2016)) news databases, such as Nexis (**Papers I-VIII**) or NewsBank (**Papers I**, **II**, **IV** and **V**), are replaced by relatively opaque, less controlled searches using media outlets' own search functions or third-party search engines. Additionally, well-established typologies used to categorise UK newspapers (**Papers I-VIII**) are not necessarily fit for the new media landscape, as emergent news brands such as Buzzfeed have yet to firmly establish audience profiles and political alignments. Similarly, the concept of 'UK news media' is problematised by the international nature of many of these emerging news sources.

The analysis of reader comments presents conceptual challenges as comments both constitute public opinion (albeit unrepresentative) and part of the media content encountered by subsequent readers (Stroud et al., 2016). Further, analysis of reader comments presents ethical concerns that do not apply to traditional media content, as, despite being in the public domain, comments represent personal opinions that were not offered as research data. Institutional ethics committees' positions on the analysis and

reporting of such data are still developing, and currently there is heterogeneity between institutions (British Psychological Society, 2017).

Similar ethical concerns exist for the use of social media data in research. A growing body of scholarship has identified friction between established ethics review processes and the dynamic field of social media research (Halford, 2017) and proposes an 'agile' approach to research ethics (Neuhaus and Webmoor, 2012). I have begun using social media data, using software (Mozdeh, 2019) to 'scrape' Twitter's public application programming interface for discussion of health policies contemporaneous with legislative events. My preliminary attempts to operationalise this data suggest that the use of automated sentiment analysis (Kumar and Sebastian, 2012) may be appropriate, enabling rapid interpretation of the presented attitudes of a large sample of Twitter users, and enabling analysis of correlations between policy events and changes to frequency and sentiment of tweets. Beyond Twitter, YouTube represents an important area of research given its popularity among young people (Ofcom, 2018), and particularly with regard to the CDoH and the pervasive presence of various forms of marketing (Freeman and Chapman, 2007; Nicholls, 2012; Cranwell et al., 2015). Again, analysing user-generated YouTube content demands a carefully considered approach to ethical practice (Legewie and Nassauer, 2018).

Beyond content analysis, there is a need for more research to understand how media content is produced (Henderson and Hilton, 2018). I plan to conduct qualitative research with journalists to examine their experiences and perceptions of the process of working with different types of policy actors in reporting on health policy issues. This research will add to existing literature (Geller et al., 2005; Waddell et al., 2005; Leask et al., 2010) on journalistic processes to further understandings of how the public health community can engage with media effectively. Another project in development will involve qualitative interviews with academic, third-sector and public-sector actors with experience of advocating policies to control the CDoH, with a view to synthesising practical lessons about advocacy strategies from different disciplines, topics and legislatures. This work will complement my existing research on media representations of policy debates, as well as the growing literature on advocacy strategies (see section 4.2). Finally, I plan to conduct primary research with young people to better understand their engagement with user-generated content and influencer marketing related to e-cigarettes, using typical and atypical examples of such content as discussion prompts. This will contribute further to the literature on the CDoH, and inform strategies for advocating further marketing regulations.

6. Conclusion

This submission comprises eight peer-reviewed journal articles and an explanatory essay. Each submitted paper documents UK news media representations of a specific health topic or policy, and each constitutes a novel contribution to understandings of the communication of health issues and contestation of public health policy. Beyond the papers' individual contributions, it is through considering them as a continuous body of work that their key contributions to knowledge and practice are drawn out, particularly in the transferrable learning that emerges across analyses of diverse health topics. This explanatory essay aimed to, firstly, contextualise the papers within theoretical literatures on mass media, media research and public health policy, and, secondly, illustrate their original contributions to knowledge and practice.

While each submitted paper contributes rich novel knowledge relevant to its specific subject area, the key findings of the body of work arise through identifying commonalities across different topics to generate transferrable learning. As described in section 5.1, this transferrable knowledge includes predicting developments in media framing and policy actor engagement in media debates, the need to carefully communicate the social groups that policies are designed to benefit, and the need for health communication to avoid reproducing harmful stigma, stereotyping and inequality. In identifying commonalities between debates involving different unhealthy commodities, the submitted works are situated within a growing global literature documenting commonalities in how different UCIs oppose regulation, and therefore how policy advocates can usefully learn from their counterparts within other policy silos (Kessler, 2001; Brownell and Warner, 2009; Wiist, 2011; Jernigan, 2012; Stuckler et al., 2012; Hawkins and Holden, 2013; Savell et al., 2014; Petticrew et al., 2016; Savell et al., 2016; Petticrew et al., 2017; Douglas et al., 2018; Knai et al., 2018; Hilton et al., 2019).

As identified in section 5.2, the predictive power of content analysis is restricted by the inherently observational nature of the method, and the transferability of learning is complicated by the heterogeneity of different health issues, policies and contexts. These limitations are mitigated to a degree within the submitted works through the use of rigorous, theory-led methods and the triangulation of findings across different topics and analytical approaches. As such, while the submitted papers cannot present conclusive prescriptions for media engagement, they do provide health communicators and policy advocates with novel learning that may contribute to practice.

The submitted papers were produced within an applied health research context with the intent of producing pragmatic recommendations for practice, and as such do not engage deeply with critical theoretical analyses of the context within which they were produced. As such, a key contribution of this explanatory essay is in situating the papers within literature and theory relating to mass media, media research epistemology and methodology, and policymaking processes. Each of these areas represents a site of profound change, with relevance both to the contributions of the submitted papers and to understanding directions of travel within the field of media content analysis in public health research.

Mass media represents a ubiquitous cultural institution (Newbold et al., 2002), exerting a powerful influence on the social world (Hall, 1989; Seaman, 1992; Habermas, 1998; Seale, 2002; Franzosi, 2004; Thorpe, 2008; Shrum, 2009), but one that is also undergoing structural changes disrupting the paradigm within which news is created, disseminated and received (Davis, 2003; Curran, 2010; Fenton, 2010; Newman et al., 2019). As mass media adapts to profound economic and technological changes, so must media research. While the submitted papers primarily focus on newspaper news, they exhibit the beginnings of a response to the changing media landscape in their incorporation of online news. Going forward, it will be necessary for media research to continue responding to the nuances and challenges of a dynamic online media environment, continuing to develop theory (Cacciatore et al., 2016) and analytical techniques to better analyse emergent aspects of media content, such as readers' comments (e.g. Gwarjanski and Parrott, 2018), user-created social media content (e.g. Basch and MacLean, 2019) and the algorithmic personalisation of news (Helberger, 2016; Allcott and Gentzkow, 2017).

Another key context of the submitted papers subject to paradigmatic change is that of epistemological and methodological approaches in communications research. The positivism that has long defined media analysis (Berelson, 1952; Laswell et al., 1952; Neuendorf, 2016) has been subject to robust epistemological challenges from critical and constructivist perspectives (Hall, 1989; Franzosi, 2008; Krippendorff, 2012), resulting in a more open field and the re-emergence of qualitative and mixed-methods approaches (Morgan, 1993; Koon et al., 2016). The methodological development exhibited within the submitted papers is consistent with this trend. The papers progressed from solely quantitative analyses using large samples and inferential statistics to analyse broad changes in frames, to more interpretivist qualitative analyses using thematic analyses to examine

nuances of specific elements of media content. The submitted works demonstrate the strengths of each approach, particularly when complementing one another in mixed methods designs. Despite a relative decline in the dominance of quantitative content analysis, positivistic approaches may be reinvigorated by developments in computer-aided automated analysis, consistent with wider trends towards integration of computer science and social science (Bonenfant and Meurs, 2020). However, I argue that, while automation can certainly complement traditional approaches (De Graaf and van der Vossen, 2013; Lewis et al., 2013; Chakrabarti and Frye, 2017), from a constructivist approach computational analysis cannot replace human interpretation of content.

The final key context within which the submitted papers must be understood is in theories and narratives of policymaking. The field of policy studies has also undergone epistemological transformation, from early assumptions of rational, linear processes, to later models acknowledging the chaotic, irrational and complex nature of policymaking (Lindblom, 1979; Durant and Diehl, 1989; Cairney, 2012a; Cairney, 2012b), as well as post-positivist theories of policy narratives (Fischer, 2003; Jones and McBeth, 2010). I have identified that mass media plays a role in each of the leading policy theories, and demonstrated how the submitted works complement policy theory, and how my increasingly interpretivist approach is consistent with directions of travel within policy studies towards recognising the importance of narratives within policymaking.

The narratives of public health and evidence-based policymaking have also undergone pronounced transformations. The submitted papers support the need for health communication and policy advocacy to uphold social justice, which is consistent with a shift from 'old' to 'new' conceptualisations of public health, enhancing biomedical approaches by integrating new analytical frameworks, social justice and the social determinants of health. The concept of evidence-based health policymaking is a flawed application of the positivist values of evidence-based medicine to imperfectly-rational social processes (Fischer, 1998; Greenhalgh and Russell, 2009). The submitted papers were produced with the assumption with rational, evidence-based policymaking is fundamentally impossible, while not rejecting the need for policy to be consistent with evidence as much as is possible within those constraints. I argue that the importance of studying the communication of policy is underlined by the understanding that policy is socially constructed (Koon et al., 2016) through narratives (Shanahan et al., 2018), and based more on ideas than evidence (Smith, 2013). As such, the submitted papers'

increasing focus on policy actors' attempts to influence media frames situated the body of work within a field of study that will only grow in relevance.

In presenting the methodological and intellectual contributions of eight pieces of media content analysis research, and situating them within three fluid cultural and theoretical contexts, I have demonstrated the value of studying mass media representations of health issues and policies. This explanatory essay satisfies its aims, by contextualising developments exhibited by the papers within developments in literatures related to the mass media, communications research and policymaking, and by demonstrating the papers' novel contributions to knowledge and practice within health communication and policy advocacy.

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The published work

Theme I: Representations of public health issues

Paper I

HILTON, S., **PATTERSON, C**. & TEYHAN, A. 2012. Escalating coverage of obesity in UK newspapers: the evolution and framing of the "obesity epidemic" from 1996 to 2010. *Obesity,* 20**,** 1688-1695.

Escalating Coverage of Obesity in UK Newspapers: The Evolution and Framing of the "Obesity Epidemic" From 1996 to 2010

Shona Hilton[1], Chris Patterson[1] and Alison Teyhan[1]

Obesity is one of the fastest growing and most serious public health challenges facing the world in the 21st century. Correspondingly, over the past decade there has been increased interest in how the obesity epidemic has been framed by the media. This study offers the first large-scale examination of the evolution and framing of the obesity epidemic in UK newspapers, identifying shifts in news coverage about the causal drivers of and potential solutions to the obesity epidemic. Seven UK newspapers were selected and 2,414 articles published between 1 January 1996 and 31 December 2010 were retrieved from electronic databases using keyword searches. The thematic content of articles was examined using manifest content analysis. Over the 15-year period there was an increase in media reporting on obesity and in particular on childhood obesity. There was evidence of a trend away from a focus on individuals towards a greater level of reporting on societal solutions such as regulatory change, with the greatest shift in reporting occurring in mid-market and serious newspapers. Given that the media have a huge influence in shaping public opinion, this shift in reporting might be an early indicator to policymakers of a growing public discourse around a need for regulatory change to tackle the obesogenic environment.

INTRODUCTION

Obesity is one of the fastest growing and most serious public health challenges facing the world in the 21st century. Over the past decade media interest in what has been coined the "obesity epidemic" has increased (1–3). Much media interest stemmed from concerns raised by the World Health Organisation which, using data from worldwide surveys, issued a global health warning that: "obesity's impact is so diverse and extreme that it should now be regarded as one of the greatest neglected public health problems of our time" (4). In the intervening years the WHO spearheaded a series of expert consultations to sensitize policymakers, academics, and experts to the problem, estimating that more than 400 million adults (9.8%) are obese worldwide (5). The prevalence of obesity in the UK is higher than most other parts of north-west Europe (6). In 2007 the UK government commissioned the Foresight Report on obesity, which highlighted the UK's escalating weight problem. The authors estimate that obesity rates doubled in Britain over the last 25 years, with nearly a quarter of adults now obese, and warned that if no action is taken 60% of men, 50% of women, and 25% of children will be obese by 2050, cautioning that: "Britain could be a mainly obese society" (p11) (7). Recent English data (8) indicates that the number of cases of overweight and obesity (BMI ≥25) increased significantly in women, men, and

children over the period 1993–2009 (**Figure 1**). Although the increase in incidence in women and men seems to have been relatively constant, the incidence of overweight and obesity in children increased sharply between 2000 and 2004, and fell between 2005 and 2009. It is too early to tell if this decrease in childhood overweight and obesity is the beginning of a long-term trend (8).

There is general agreement that obesity's high medical, psychological, and social costs, its multiplicity of causes, and its persistence from childhood into adulthood make the case for early prevention (9). However, less agreement exists on the optimum prevention strategies for tackling the problem. Obesity is generally agreed to be primarily linked to increased energy intake and decreased energy expenditure facilitated by environmental influences that favor energy-dense diets and sedentary lifestyles (6). As such, it has been argued that successful prevention strategies need to address both individual and societal factors so that individuals develop strategies to control their weight and policies are enacted that provide support for individuals while eliminating environmental barriers to healthy food choice and active lifestyles (9).

The media are integral to constructions of the obesity epidemic through communicating stories about the nation's expanding waistlines to the public. In recent years there has

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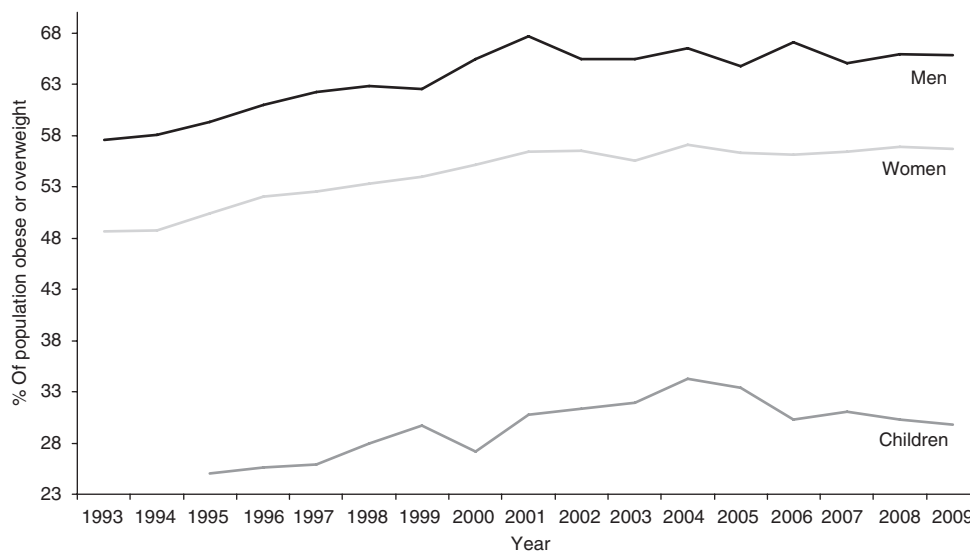
Figure 1 Proportion of obese and overweight adults (16+ years) and children (2–16 years) in England. Source: The Health Survey for England 2009.

been debate about the value of calling the obesity problem an epidemic. Some social researchers argue that it is a socially constructed "postmodern epidemic" which generates images of a society out of control, creating an "emotional maelstrom" (10) and moral panic unlikely to lead to a more knowledgeable public (11). Indeed, far from addressing both individual and societal factors that facilitate obesity, it has been suggested that this moral panic may overburden individuals with personal responsibility while masking the broader sociopolitical influences behind the obesity epidemic (12). In this respect, Lawrence (13) argues that the assignment of blame and burden in public debates can usefully be analyzed in terms of "individual" vs. "systemic" frames, with systemic frames assigning responsibility and action to government, business, and larger social forces requiring regulatory change (13).

We identified four research studies examining the news media's framing of the obesity problem. Lawrence's (13) content analysis of the framing of obesity in American newspapers and television news between 1985 and 2004 demonstrates growth in overall coverage accompanied by a shift in the identification of causes of obesity from the individual to the environmental. She suggests that in examining media constructions of the obesity epidemic it is important to identify how the problem has been defined, whether there are any causal interpretations, moral evaluations, recommendations or solutions to the problem of obesity. Kim and Willis (14) conducted an analysis of American newspaper articles and television news reporting of obesity over a 10-year period from 1995–2004 and found that over this period there was a growing trend away from mentions of individual solutions towards a greater focus on societal causes and solutions to the obesity problem. They observed that when societal drivers of obesity are mentioned the news media rarely present societal solutions and that the individual framing greatly outnumbered societal framing in terms of causes and solutions. Another analysis of American media coverage of obesity is presented by Barry *et al.* (15),

whose content analysis of US newspaper, magazine, and television news framing of childhood obesity between 2000 and 2009 found that the number of stories reporting on childhood obesity rose significantly from 2001 to 2003, and then remained at a high level until 2007 before decreasing substantially. Similarly to the findings of Kim and Willis (14), Barry *et al.* (15) found that news stories tended to mention individual solutions more often than system-level solutions. Further, they found that system-level solutions were more likely to be mentioned in newspaper articles than in magazine articles or television news items. Holmes (2) investigated one Canadian newspaper's framing of the obesity epidemic between 1996 and 2006, identifying a steady increase in overall coverage during that period. Both Lawrence (13) and Holmes (2) observed an increasing focus on childhood obesity during their respective periods of analysis.

Examining media constructions of the obesity epidemic is not only important for understanding the emerging public debate on obesity but also in identifying popular discourses. Popular views on issues can draw on stereotypes and present simplified descriptions of problems which do not always reflect the current state of scientific evidence (7). While public understandings of health and illness cannot be attributed solely to the media since audiences filter what they read, see, and hear through personal knowledge and experiences, it is widely recognized that the media influence people's beliefs and health-related behaviors (10,16). The recent controversy over the safety of the MMR vaccine, in which the media's biased reporting of evidence of a link between bowel disease, autism, and the MMR vaccine undermined confidence and uptake in the vaccine, is testimony to the agenda-setting influence of the media in telling readers what to think about (17). Kitzinger notes that the level of media attention "correlates with the degree of salience of these issues for the public…public concern and policy attention rises and falls in response to shifts in media coverage (rather than changes in the actual size of the problem in the real

world)" (18). Thus, the more news coverage an issue receives, the more important the issue may become (19). In this way the news media play an important role in propagating and shaping public understandings about the obesity epidemic.

To our knowledge, this is the first large-scale study of newspapers' framing of the obesity epidemic in the UK. In this study, we aim to examine the evolution and framing of the obesity epidemic over the past 15 years in British newspapers to identify any shifts in news coverage about the causal drivers of, and potential solutions to, the obesity epidemic.

METHODS AND PROCEDURES

We selected seven UK daily newspapers (including each daily newspaper's corresponding Sunday newspaper) with high circulation figures and a range of readership profiles (http://www.abc.org.uk, http://www.nrs.co.uk). The newspapers represented three genres: serious, mid-market tabloids, and tabloids. Our sample consisted of three "serious" newspapers (The Guardian & The Observer; The Independent & The Independent on Sunday; The Daily Telegraph & The Sunday Telegraph), two "mid-market tabloid" newspapers (The Daily Mail & The Mail on Sunday; The Express & The Sunday Express), and two "tabloids" (The Sun & The News of the World; The Mirror & The Sunday Mirror). This typology has been used in other analyses of print media discourses to select a broad sample of newspapers with various readership profiles and political orientations (20,21). The serious genre includes broadsheet and formerly broadsheet newspapers, which are serious in tone, represent a relatively diverse range of political ideologies, and tend to be associated with a middle-class readership. Middle-market tabloids are tabloid-format newspapers that tend to be more serious in tone than those of the tabloid genre, and tend to be associated with a middle-class, right-wing readership. Tabloid newspapers, also referred to as "red tops", can be less serious and more sensationalist in content. They represent a relatively diverse range of political ideologies, and tend to be associated with a working-class readership (20,21).

Our search period was from 1 January 1996 to 31 December 2010. We selected this period to include a short period leading up to the global health warning issued by the WHO in 1997. Incorporating articles published within the year before the global health warning allows a baseline level and tone of reporting to be gauged. Relevant articles from target publications were identified using the electronic databases Nexis UK and Newsbank, adopting the search terms "obesity", "obese", "fat nation", "fatty", "fatties" or "lardy" in the headline. This search identified 3,878 articles which were exported into text files. Each article was printed and scrutinized by one researcher from a team of three to establish whether it met two inclusion criteria. The first criterion was that human obesity be the primary focus of article, specifically that obesity was the primary topic of at least 50% of the article. The second criterion was that the article must have been published in the news, comment, feature, business, city, sport, travel or home section of the newspaper; all letters mentioning obesity or mentions of it in TV guides or reviews were excluded. Based on these criteria 1,464 articles were classed as ineligible, leaving 2,414 eligible articles for detailed coding and analysis.

To develop a coding frame a random selection of 100 articles were read through to identify the key discourses around obesity. These discourses became thematic categories in an initial coding frame. Using the principles of grounded theory further batches of 20 articles were read and coded until no new categories emerged from the newspaper articles. At this point, we assessed we had reached "saturation", which grounded theory suggests is a sense of closure that occurs when data collection ceases to provide new information, and when patterns in the data become evident (22). The coding of the articles was conducted over a 10-week period by three coders who worked together in close collaboration with the first author checking and validating each other's coding.

Newspapers' manifest content was analyzed (23). Manifest content refers to that which is explicitly stated, and draws on the objective and replicable qualities of quantitative methods. To systematically quantify manifest content, every article was read line by line and coded to indicate whether each of the thematic categories in the coding frame was mentioned. The key thematic categories examined newspaper framing of biological, individual or societal drivers and solutions. The coding framework recorded the publication, date, page, and article word count. To test the inter-rater reliability of all aspects of coding, a random sample of just over 10% ($n = 280$) of the 2,414 eligible articles were double coded. Using Cohen's κ-coefficient, we determined the inter-rater agreement for the scoring of each thematic category. This ranged from a fair level of agreement ($κ = 0.304$) to an almost perfect level of agreement ($κ = 0.871$), based on Landis and Kochs' (24) "benchmarks" for interpreting and discussing κ.

Data were analyzed using SPSS 15 and Stata 10 (SPSS, Chicago, IL and Stata, College Station, TX). We used $χ^2$ tests to determine whether constructions of the obesity problem (i.e., how the problem had been defined, key drivers and solutions) were differentially reported in the three different genres of publication (serious, mid-market, and tabloid). We visually examined trends over time in the reporting of drivers and solutions by plotting the proportion of articles mentioning drivers/solutions. Three-year moving averages were plotted to smooth out short-term fluctuations i.e., for 2007 we plotted the average proportion of 2006, 2007, and 2008; for 2008 we plotted the average of 2007, 2008, and 2009 etc. Trends over time were formally tested using logistic regression (where the binary outcome was the presence or absence of a given driver/solution). A systematic model building strategy was used: initially only year was included as a covariate, quadratic and cubic year terms were then added to detect any departures from linearity and were retained in the model where significant. Genre and word count were then included to determine if trends remained significant after adjustment for these potential confounders. Finally, an interaction term between newspaper genre and year (and year squared/cubed where appropriate) was tested to establish whether trends over time differed significantly by genre. Where significant interactions were found, models were re-run stratified by genre. Throughout this paper, statistical significance is defined as $P < 0.05$.

RESULTS

Between 1996 and 2010 a total of 2,414 articles on obesity were published in the seven newspapers included in this study (**Table 1**). Few of these articles were printed on front pages (<4%), although the proportion varied by publication (from none in The Mirror to 9% of The Telegraph). Article length ranged from 15 to 4,402 words, with an overall median count of 381 words. The distribution of article word length was positively skewed; a large number of articles were short (64% with fewer than 500 words). Tabloid newspaper articles had markedly lower median word counts (162 words) than those of the mid-market (419) and serious (482) publications.

Before 2000 there were less than 40 newspaper articles per year published on obesity. Between 2001 and 2004 this number rapidly increased; in 2004 there were 287 articles. In addition, there was a substantial increase in the total yearly word count of obesity articles, from <20,000 words in 2000 to over 151,000 in 2004. There was a temporary dip in the number of articles in 2005, and a slight decline from 2008 (**Figure 2**).

Overall, the obesity articles were significantly more likely to report on children (40.4%, 95% confidence interval 38.4–42.4%) than women (16%, 14.6–17.5%) or men (9.4%, 8.2–10.6%). Before 2001 a similar number of articles mentioned men, women, and children in relation to obesity, however, in

Table 1 Summary of articles in sample

Genre	Title	Total articles		Front page articles		Word count		
		n	% (95% CI)	*n*	% (95% CI)	Lower quartile	Median (50%)	Upper quartile
Serious	Guardian & The Observer	402	16.7 (15.2–18.1)	20	4.98 (2.84–7.10)	343	566	786
	Independent & Independent on Sunday	318	13.2 (11.8–14.5)	7	2.20 (0.58–0.38)	261	477	684
	Daily Telegraph & Sunday Telegraph	315	13 (11.7–14.4)	29	9.21 (6.00–12.42)	235	407	598
Mid-market	Daily Mail & Mail on Sunday	392	16.2 (14.8–17.7)	18	4.59 (2.52–6.67)	310	487	660
	Express & Sunday Express	367	15.2 (13.8–16.6)	15	4.09 (2.05–6.12)	198	338	482
Tabloid	Mirror & Sunday Mirror	304	12.6 (11.3–13.9)	0	0	105	224	494
	The Sun & News of the World	316	13.1 (11.7–14.4)	4	1.27 (0.02–2.50)	77	126	234
Total		2,414	100.0	93	3.85 (3.08–4.62)	180	381	610

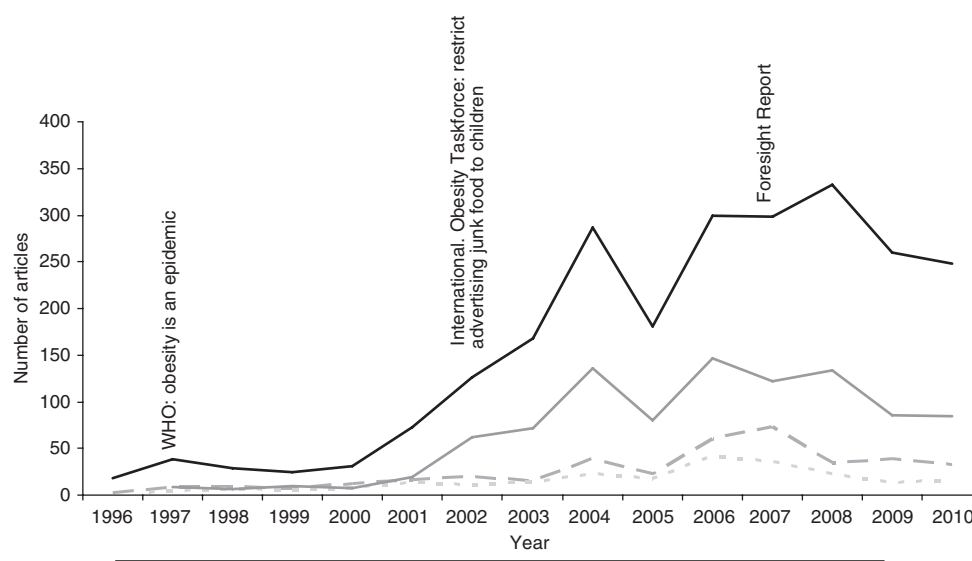CI, confidence interval.

Figure 2 Number of articles reporting on obesity over time.

subsequent years the reporting of childhood obesity increased (**Figure 2**). Before 2001, 24.1% (17.0–31.2%) of articles mentioned childhood obesity, compared to 44.2% (40.8–47.6%) from 2001–2005 and 39.9% (37.3–42.4%) from 2005–2010.

Many of the articles reported obesity rates, and those that did were more likely to include UK obesity rates (39.2%, 37.1–41.0%) than obesity rates outwith the UK (9.6%, 8.4–10.7%). A higher proportion of serious (38.7%, 35.8–41.7%) and mid-market (47.6%, 44.0–51.1%) articles reported obesity rates than tabloid articles (29.0%, 22.35–29.26%). A rise in obesity prevalence (either past, present or future) was mentioned in 37.7% of articles (35.8–39.7%), with tabloid articles (25.8%, 22.4–29.2%)

significantly less likely to report rising rates than mid-market (39.1, 35.7–42.6%) and serious (43.9%, 40.8–46.9%) articles.

Problems caused by obesity, both to individuals and society, were reported in many of the articles (**Table 2**). The most commonly reported problem was the risk to health, mentioned by more than half of articles (52.5%, 50.5–54.5%). Mid-market and serious articles were significantly more likely to mention risks to health than tabloid articles. Articles also reported that obesity was a burden to the National Health Service (NHS) (17.0%, 15.5–18.5%) and was an economic cost to society (14.6%, 13.2–16.0%); mid-market articles were significantly more likely to mention these economic implications of obesity

Table 2 Newspaper reporting on problems of obesity, drivers of obesity, and solutions to obesity, overall and by newspaper genre

	Overall		Tabloid		Mid-market		Serious		
	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	χ^2 *P* value[a]
Problem definitions									
Obesity as a risk to health	1,268	52.5 (5.05–54.5)	269	43.4 (39.5–48.3)	456	60.1 (56.6–63.6)	543	52.5 (49.4–55.5)	<0.0005
Obesity as a cosmetic problem	79	3.3 (2.6–4.0)	20	3.2 (1.8–4.6)	30	4.0 (2.6–5.3)	29	2.8 (1.8–3.8)	0.399
Obesity as a burden to the NHS	410	17.0 (15.5–18.5)	69	11.1 (8.6–13.6)	166	21.9 (18.9–24.8)	175	16.9 (14.6–19.2)	<0.0005
Obesity as an economic cost to society	353	14.6 (13.2–16.0)	62	10.0 (7.6–12.4)	141	18.6 (15.8–21.4)	150	14.5 (12.3–16.6)	<0.0005
Drivers of obesity									
Overall drivers									
Any drivers mentioned	1,467	60.8 (58.8–62.7)	321	51.8 (47.8–55.7)	490	64.6 (61.1–68.0)	656	63.4 (60.4–66.3)	<0.0005
Any biological/ genetic driver mentioned	231	9.6 (8.4–10.7)	39	6.3 (4.4–8.2)	82	10.8 (8.6–13.0)	110	10.6 (8.7–12.5)	0.006
Any individual driver mentioned	1,138	47.1 (45.1–49.1)	244	39.4 (35.5–43.2)	398	52.4 (48.9–56.0)	496	47.9 (44.9–51.0)	<0.0005
Any societal driver mentioned	831	34.4 (32.5–36.3)	162	26.1 (22.7–29.6)	268	35.3 (31.9–38.7)	401	38.7 (35.8–41.7)	<0.0005
Individual drivers									
Mentions poor diet, overeating	734	30.4 (28.6–32.2)	158	25.5 (22.0–28.9)	269	35.4 (32.0–38.9)	307	29.7 (26.9–32.4)	<0.0005
Lack of exercise, sedentary lifestyle	596	24.7 (23.0–26.4)	114	19.0 (15.3–21.4)	206	27.1 (24.0–30.3)	276	26.7 (24.0–29.4)	<0.0005
Identifies a lack of parenting	217	9.0 (7.8–10.1)	45	7.3 (5.2–9.3)	76	10.0 (7.9–12.2)	96	9.3 (7.5–11.0)	0.188
Societal drivers									
Identifies poor food labelling, education	104	4.3 (3.5–5.1)	19	3.1 (1.7–4.4)	23	3.0 (1.8–4.3)	62	6.0 (4.5–7.4)	0.002
Abundance of processed/fast food	457	18.9 (17.4–20.5)	78	12.6 (10.0–15.2)	164	21.6 (18.7–24.5)	215	20.8 (18.3–23.2)	<0.0005
Lack of health services, facilities[b]	81	3.4 (2.6–4.1)	10	1.6 (0.6–2.6)	29	3.8 (2.5–5.2)	42	4.1 (2.9–5.3)	0.019
Identifies food/ drink advertising, promotions	225	9.3 (8.2–10.5)	23	3.7 (2.2–5.2)	66	8.7 (6.7–10.7)	136	13.1 (11.1–15.2)	0.019
Technological changes, modern living[c]	229	9.5 (8.3–10.7)	38	6.1 (4.2–8.0)	72	9.5 (7.4–11.6)	119	11.5 (9.6–13.4)	0.001
Solutions to obesity									
Any solution mentioned	1,607	66.6 (64.7–68.5)	359	57.9 (54.0–61.8)	557	73.4 (70.2–76.5)	691	66.8 (63.9–69.6)	<0.0005
Biological	462	19.1 (17.6–20.7)	97	15.7 (12.8–18.5)	168	22.1 (19.2–25.0)	197	19.0 (16.6–21.4)	0.01
Individual	865	35.8 (33.9–37.7)	198	31.9 (28.2–35.6)	332	43.7 (40.2–47.3)	335	32.4 (29.5–35.2)	<0.0005
Societal	928	38.4 (36.5–40.4)	173	27.9 (24.4–3.14)	311	41.0 (37.5–44.5)	444	42.9 (39.9–45.9)	<0.0005

CI, confidence interval; NHS, National Health Service.

[a]χ^2 test of whether proportions differed between genres. [b]Includes a lack of weight loss and fitness interventions offered by health services, and a lack of good fitness facilities such as parks and leisure centres. [c]Includes technological developments and changes in modern life that reduce energy expenditure, such as sedentary working lives and the use of motorized transport.

than tabloid or serious articles. The term "obesity epidemic" was used in 444 of the articles (18.4%, 16.81–19.9%), and first occurred in serious newspaper articles in 1996, tabloids in 1998, and mid-markets in 1999.

The majority (60.8%, 58.8–62.7%) of articles mentioned at least one causal driver of obesity, but tabloid articles were significantly less likely to report causal drivers than those of the other genres. Individual drivers were the most commonly mentioned (47.1%, 45.2–49.1%), ahead of societal drivers (34.4%, 32.5–36.3%), and biological/genetic drivers (9.6%, 8.4–10.7%). Individual drivers were most likely to be mentioned in mid-market articles (52.4%, 48.9–56.0%) while societal drivers were most frequently mentioned in serious articles (38.7%, 35.8–41.7%). Specific individual drivers mentioned included poor diet and over-eating (30.4%, 28.6–32.2%); lack of exercise and sedentary lifestyle (24.7%, 23.0–26.4%); and a lack of parenting (9.0%, 7.8–10.1%). Societal drivers included an abundance of processed food and fast food (18.9%, 17.4–20.5%); food and drink advertising and promotions (9.3%, 8.2–10.5%); poor food labelling and education (4.3%, 3.5–5.1%); technological changes and changes to modern living (9.5%, 8.3–10.7%); and a lack of health services, interventions, and facilities (3.4%, 2.6–4.1%).

Two-thirds of the articles mentioned one or more solutions to obesity. Many mentioned societal solutions (38.4%, 36.5–40.4%), such as improving education and regulating food labelling. A similar proportion mentioned individual solutions (35.8%, 33.9–37.7%) such as changing individual eating and exercise behaviors. Biological solutions, such as pharmaceutical or surgical treatment, were reported by 19.1% (17.6–20.7%) of articles. Mid-market articles were most likely to mention any solutions, as well as biological and individual solutions specifically. However, serious articles were slightly more likely to mention societal solutions than mid-market articles.

Trends over time in the reporting of drivers and solutions were examined (**Figure 3**). There was a significant decline in the proportion of articles which mentioned individual drivers of obesity between 2001 and 2010; in the earlier years there appears to have been a slight rise but small numbers make it difficult to draw firm conclusions. The trend in individual drivers differed slightly by genre (there was a significant interaction between the cubic term for year and genre, $P = 0.031$); the decline was greatest for the mid-market articles. By 2010 the proportion of articles mentioning individual drivers was similar in all three genres, and adjustment for article word count did not alter these findings. The trend in reporting of societal drivers was fit best by a quadratic effect; there was a slight increase in reporting from 1996 to 2002/03 followed by a decline. This trend did not differ by genre. A slight but significant linear increase in reporting of individual solutions was identified after adjusting for genre and word count. This trend did not differ by genre. There was a nonlinear trend in the reporting of societal solutions, characterized by a significant increase from 1996 to 2006 followed by a gradual decline. Adjustment for genre and word count did not alter this finding, and the trend did not differ by genre.

DISCUSSION

Much attention is focused on obesity by the news media. As a health risk obesity is recognized as a contributing factor to many health problems; over half of the articles analyzed reported on the health implications of obesity, and many reported on the economic cost to the NHS and to society as a whole. Over the past decade studies examining the media coverage of obesity have all reported a rise in coverage (13–15), with some research identifying a sharp 20-fold increase over a 5-year period from 1999 to 2004 (3). This concurs with our findings that increasing numbers of newspaper articles reported on obesity from
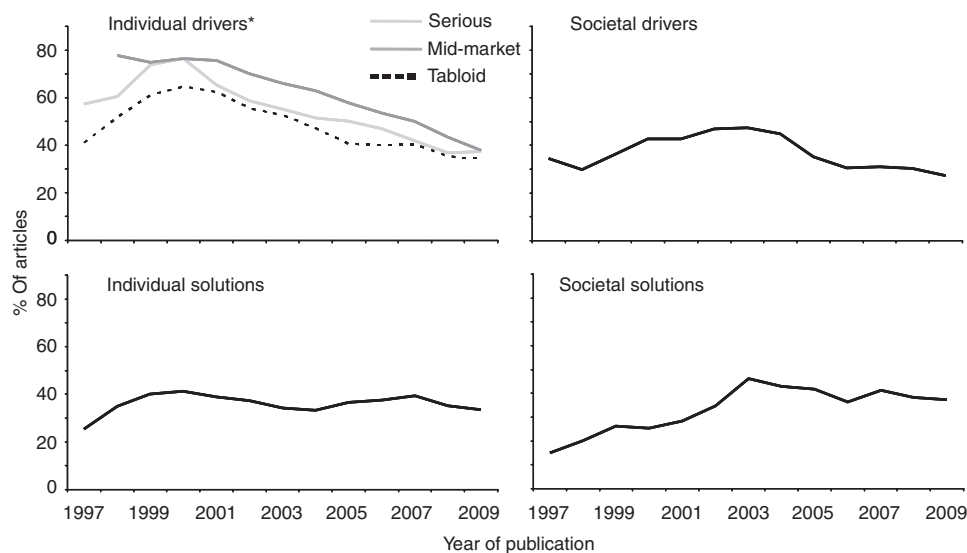

Figure 3 Trends in the reporting of drivers and solutions (observed values, 3-year moving averages shown).*Trends presented by genre for individual drivers as interaction between year cubed and genre was significant ($P = 0.03$).

1996 to 2010, with a sharp increase leading up to 2004, when there was much newspaper coverage surrounding the WHO Task Force Report (25). This rise in media reporting on obesity also corresponds with the steady global rise in obesity rates and with increasing efforts to identify causal drivers of, and potential solutions to, the obesity problem. In this respect, the WHO has adopted a strong stance in warning the world of the dire consequences for global health posed by the escalating problem (4) and in identifying responsibility for solving the problem, stating that "it is no longer acceptable to blame individuals for obesity" (25).

In contrast to the fears expressed about the use of the word "epidemic" leading to a sense of moral panic and overly burdening individuals with responsibility for the obesity problem (12), Holmes (2) argues that framing the problem as an "epidemic" helps to define it as a societal problem based on the argument that, while obesity as an illness can be framed as a risk to the individual, an epidemic always presents a threat to populations and therefore needs to be addressed at the population level. The UK's Foresight Report on obesity highlights the need to go beyond targeting messages to individuals to eat less and exercise more, and to tackle the causal drivers of the obesogenic environment (7). How the obesity problem is framed and whom is held responsible by experts in key reports is important because these discourses are often reported by the media, who in turn play a critical role in defining the scale of the obesity problem and in telling the public what is important to know about the issue.

Our analysis identified a slight shift away from a focus on individuals to a greater level of reporting of societal solutions (**Figure 3**). The most pronounced element of these changes was the decline in the proportion of articles reporting on individual drivers, such as poor diet and lack of exercise, which is consistent with the findings of other studies in this area. Kim and Willis (14) also found an increase in news reporting on obesity and a growing trend away from mentions of individual solutions towards a greater focus on societal causes and solutions to the obesity problem. Similarly, Lawrence (13) identified a trend towards a greater focus on the role societal factors have played in obesity in the United States, and asserts that this overall trend was accompanied by an increase in the number of political and public debates about taxing junk food and lawsuits filed against fast food restaurants. On the 28 April 2011, Margaret Chan, Director-General of the WHO, was reported in the media calling for the multinational corporations who, driven by commercial interests, aggressively advertise cheap food and drinks laden with fat and sugar, to share the responsibility for the obesity epidemic (26).

By analyzing the frequency of mentions of different types of drivers of obesity, we observed that articles reporting on individual drivers frequently acknowledged the role of both poor diet and sedentary lifestyles in causing obesity, while articles reporting on societal drivers were more likely to identify those drivers related to diet (i.e., energy intake) than those related to sedentary lifestyles (i.e., energy expenditure). As such, it could be that the shift in media reporting (and

the likely corresponding shift in public understandings) from individual to societal drivers is accompanied by a tendency to view obesity as being disproportionately caused by excess energy intake rather than insufficient energy expenditure. It may be pertinent for public health campaigns to focus on the importance of exercise to rebalance public perceptions. Conversely, policymakers may strategically choose to focus on structural solutions that seek to improve diet instead of increasing activity on the basis that those solutions are more likely to be seen as legitimate.

The finding that newspapers of the serious genre are more likely to report on both societal drivers and societal solutions than those of the other genres is perhaps predictable, but this evidence may be useful in informing the design and targeting of public health promotion campaigns. Positive correlations between low socioeconomic status and vulnerability to obesity are well-established and as such educators and policymakers must take into account that the newspapers targeted at the most vulnerable group are doing the least to foster attitudes receptive to structural solutions.

Coinciding with the recent indications from the Health Survey for England that the upward trend in obesity may have slowed in recent years, we found a decline in the number of newspaper articles published about obesity between 2008 and 2010 (**Figure 2**). Barry *et al.* (15) identified a similar decline in US media reporting on obesity over the same period. We are unsure why there was a temporary dip in newspaper coverage of obesity in 2005, but a potential explanation is that other news events were dominating media attention (e.g., the aftermath of the 2004 Indian Ocean tsunami and the 7 July 2005 London bombings).

Our analysis identified a substantial rise in the proportion of articles reporting on obesity in children in the mid-2000s. Moffat (27) suggests that there has been a sharp rise in interest in childhood obesity since 2000. This is consistent with Holmes and Lawrence's findings and accompanies an increased incidence of factual and fictional television programmes about overweight children in the UK in recent year, such as: "Honey, we're killing the kids" "Jamie's school dinners" "Supersize vs. superskinny kids" and "Fat families". The focus on children and obesity may be the result of a general acknowledgement that children are most vulnerable to the effects of food advertising (28). In 2003, the UK Office of Communications found advertisers of fast food, soft drinks, and restaurant chains spent £522 million promoting their products on television (29), creating a "toxic environment" in which the food industry promotes inexpensive, high-convenience, high-density and low-nutrient food, and in which physical activity is low because of a reliance on cars as a result of poor urban planning and neighborhoods perceived to be unsafe (27).

There may be a relationship between the increased media focus on child obesity and the shift from individual to societal causes and solutions. Schneider and Ingram (30) argue that social constructions of populations influence the choices of policymakers, and children as defined as dependents: a powerless, positively-viewed group who are not expected to be responsible

for their own well-being. Portraying the obesity epidemic as a problem that affects children creates an atmosphere in which policy-based solutions to obesity are more easily justified than they might otherwise be.

The study's findings should be viewed in light of several limitations. First, our findings represent discourse in newspapers exclusively, not those in wider mass media, as such the trends identified cannot be generalized to the broader media. Second, the range of κ-values of inter-rater agreement indicated that some categories were more consistently coded than others, and finally that by using manifest coding we may have overlooked more nuanced aspects of reporting, for example an article may mention children and societal drivers, but our method does not allow scrutiny of how the article relates these two categories to each other. Further analysis of the sample using qualitative methods is planned, and will be valuable in shedding light on such gaps. Limitations aside, our study has a number of strengths. It is the first large-scale examination of UK newspapers covering a relatively long period, and our approach to coding each article by hand was highly rigorous compared to the quicker method of computer-aided word searches.

In conclusion, examining media coverage of issues sheds light on how ideas develop, gain credibility and become part of public discourse. Numerous studies have shown that the public identify the media as their primary source of science and medical information (31) and that the agenda-setting function of the media is highly influential in telling readers what to think about. As obesity continues to escalate and each generation becomes heavier than the last, it seems little progress has been made in halting the obesity epidemic since the WHO's early warnings were issued. From this analysis, it seems that over the past 15 years, although there has been a steady increase in obesity rates, there has been a much sharper increase in news stories reporting obesity, suggesting it has become higher on the news agenda. There is also some evidence of a slight shift away from framing the problem around individual drivers, which tend to focus on voluntary approaches to individual change, to viewing the epidemic as one best tackled by regulatory change at the population level. This changing public discourse carries some promise for reframing the scope of the problem, and might be an early indicator to policymakers of a growing public discourse calling for regulatory change aimed at tackling the obesogenic environment.

DISCLOSURE

The authors declared no conflict of interest.
See the online ICMJE Conflict of Interest Forms for this article.

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Theme I: Representations of public health issues

Paper II

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Normalisation and Stigmatisation of Obesity in UK Newspapers: a Visual Content Analysis

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Abstract: Obesity represents a major and growing global public health concern. The mass media play an important role in shaping public understandings of health, and obesity attracts much media coverage. This study offers the first content analysis of photographs illustrating UK newspaper articles about obesity. The researchers studied 119 articles and images from five major national newspapers. Researchers coded the manifest content of each image and article and used a graphical scale to estimate the body size of each image subject. Data were analysed with regard to the concepts of the normalisation and stigmatisation of obesity. Articles' descriptions of subjects' body sizes were often found to differ from coders' estimates, and subjects described as obese tended to represent the higher values of the obese BMI range, differing from the distribution of BMI values of obese adults in the UK. Researchers identified a tendency for image subjects described as overweight or obese to be depicted in stereotypical ways that could reinforce stigma. These findings are interpreted as illustrations of how newspaper portrayals of obesity may contribute to societal normalisation and the stigmatisation of obesity, two forces that threaten to harm obese individuals and undermine public health efforts to reverse trends in obesity.

INTRODUCTION

Obesity is a major, and growing, public health concern. Globally, obesity affects more than one in ten adults, and prevalence has more than doubled since 1980 [1]. In 2009, 22% of men and 24% of women [2] in England were obese (defined as a BMI greater than, or equal to, 30 [3]), as were 27% of men and 28% of women in Scotland [4]. Obesity's rapid growth and links to increased mortality and morbidity [5] have led the global obesity problem to be described as an epidemic [6].

Explanations for the causes of obesity have changed over time. Focus has recently shifted somewhat away from viewing obesity as a consequence of negative individual behaviour and towards viewing it as a social and environmental phenomenon [7, 8], and one that can be viewed as a natural human response to overwhelming environmental influences [5, 6]. In their history of the medicalisation of obesity, Chang and Christakis [9] observe that: *'Initially cast as a social parasite, the [obese] patient is later transformed into a societal victim'* (p.155). Underpinning the structurally-driven obesity epidemic is the 'obesogenic environment', a combination of features of the post-industrial built, economic, political and sociocultural environments that create barriers to healthy eating and active lifestyles [10, 11]. Hill and colleagues [6] suggest that: *'in pursuing the good life people have created an environment and a society that unintentionally promote weight gain and*

obesity, given peoples' genetic and biological make-up' (p.20).

The mass media are an important part of the sociocultural environment. Agenda-setting theory illustrates how mass media are instrumental in setting the public agenda, determining the issues to which people are exposed, and what information they receive about those issues [12]. The mass media reflect, reinforce and shape common culture, including public health-related beliefs and behaviours [12, 13]. Media interest in obesity has grown quickly over the past two decades [8, 14], coexisting with increases in the incidence of overweight and obesity in the UK and worldwide [15]. The increasing quantity of reporting about obesity, coupled with ability of mass media to help define public understandings of health issues, means that the media represent an important element of the obesogenic environment.

One way that mass media could influence public understandings and perceptions of obesity is by contributing to its normalisation. Normalisation of obesity is a cyclical process by which shifting public perceptions of weight lead to increases in population adiposity, exacerbating the obesity problem [16-18]. Underpinning this theory is the concept that as average body mass increases within a population, so does that population's familiarity with, and acceptance of, increased body mass. Increased acceptance may prevent individuals from recognising, and attempting to regulate, unhealthy adiposity in themselves, exacerbating the prevalence of obesity and likely increasing population mortality and morbidity [5]. Keightley and colleagues [18] describe how normalisation might condition individuals to rationalise obesity in themselves:

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'It is possible that the increase in the proportion of the population who are overweight or obese may have resulted in a normalising effect on perceptions of weight and as a result, thus changing the social ideology of being fat. That is, the threshold of what has been deemed 'fat' in the community may be rising to accommodate increased average weights in the population. It is possible therefore, that through social conditioning, individuals may rationalise the extent and/or risks of obesity based on a perception of physical fitness and social conditioning of body morphology.'

KEIGHTELY, CHUR-HANSEN, PRINCI & WITTERT, P.E342

Moffat [19] suggests that, despite objections by some researchers that the obesity epidemic is characterised by unhealthy moral panic and alarmism, many health professionals fear that the normalisation of obesity has generated a dangerous apathy about the health risks of obesity. In addition to media representations, potential drivers of normalisation include 'vanity sizing', the phenomenon of clothing retailers labelling their garments as smaller than they are [20], growing food portion sizes [21] and the increasing medicalisation of obesity [17, 22].

A wealth of evidence highlights shifting societal perceptions of weight [23]. Overweight and obese individuals increasingly underestimate their own weight [16, 24] and parents often fail to recognise obesity in their children [25, 26]. For example, Johnson and colleagues' [16] comparison of two UK household surveys from 1999 and 2007 found that increases in self-reported weight over time were matched by an increase in the body-size threshold at which respondents deemed themselves to be overweight. Overweight and obese respondents to the 2007 survey were less likely to describe their weight status accurately than were their 1999 counterparts. The researchers note that this shift occurred despite of public health campaigns and elevated news reporting on the topic of overweight and obesity. Duncan and colleagues [27] studied the relationship between weight perceptions and weight-related attitudes in the United States. Their analysis of survey data found that overweight and obese respondents who misperceived their weight were much less likely to want to lose weight, and to have tried to lose weight, than those who perceived their weight accurately. This suggests misperception of weight can act as a barrier to adopting healthy lifestyles.

In addition to a decline in individuals' ability to accurately assess their own weight, there is evidence that obesity stigma could undermine efforts to tackle the obesity problem [28]. Stigma is commonly defined in terms of identifying certain characteristics as deviant from widely-accepted societal norms, and therefore marking individuals who embody those characteristics as undesirable outsiders [29]. Link and Phelan [29] identify four interrelated components that converge to create stigma: distinguishing and labelling human differences; linking the labelled individuals to negative stereotypes; separating labelled individuals from those without the undesirable characteristics; and finally discrimination and the resulting social disadvantage of the labelled persons. This model can be applied to the process of stigmatisation of obese individuals: humans are be labelled by their BMI category; obese BMI is often associated with negative stereotypes including greed, sloth and lack of discipline [30]; the obese population is often mentioned as a specific societal group; and obese individuals can be subject to discrimination and disadvantage in various social spheres [31].

Obesity stigma has consequences for both psychological and physical health. Psychological consequences include depression, self-esteem, body-image dissatisfaction, and unhealthy coping strategies. Crucially, stigma does not appear to provoke the adoption of healthier lifestyles. On the contrary, evidence suggests that stigmatisation increases binge-eating [32, 33] and threatens physical health [31]. As such, it is vital that public health efforts to reduce obesity do not stigmatise it. There is some evidence that media representations might contribute to the stigmatisation of obesity [28, 30], but as yet this issue has received relatively little attention.

One aspect of newsprint coverage that content analyses often overlook is the images that illustrate articles. There is evidence that images can significantly influence readers' interest in, and interpretations of, news articles [34, 35], and that news consumers can recall news images long after their memory of the content of the accompanying text has faded [36]. The power of news images is such that there is value in analysing them in addition to text. Gollust and colleagues [37] analysed descriptive and demographic features of images of overweight and obese individuals published in American news magazines, and Heuer and colleagues [38] performed a similar analysis of photographs accompanying American online news stories about obesity. Both of these studies found that image subjects were often depicted engaged in stereotypical behaviours, including eating junk food and watching television. Due to news images' potential to influence readers' perceptions, these stereotypical depictions may reinforce damaging stigma. Furthermore, Lewis and colleagues [39] suggest that the subtle forms of stigma reproduced in banal forms such as newspaper representations tend to be the most harmful in terms of health and social wellbeing. Heuer and colleagues [38] suggest that the stigmatising depictions may cause blame for obesity to be attributed to obese individuals, which is directly at odds with the goals of public health policy to address obesity as a social and environmental issue.

The normalisation and stigmatisation of obesity are two damaging phenomena in which mass media portrayals may play a role. In this study, we investigate how UK newspapers might contribute to each of those phenomena. We analyse the photographs used to illustrate newspaper articles about obesity with reference to the text that accompanies them to examine how articles represent obesity. Our research questions are, firstly, to what extent might newspaper images of obesity contribute to the normalisation of obesity, and secondly, how might they contribute to the stigmatisation of obesity. To answer the first research question, we analyse the differences between article authors' written descriptions of image subjects' body sizes and researchers' visual estimates of those subjects' body sizes. Visual estimation of BMI is less accurate than true physical measures, but is used routinely by doctors to diagnose obesity [40]. Disparities between these descriptions and evaluations may be important

Table 1. Articles in Sample by Publication and Genre

Genre	Genre Totals		Publication	Publication Totals	
	Count	%		Count	%
Serious	13	10.9	Independent & Independent on Sunday	13	10.9
Mid-market	47	39.5	Daily Mail & Mail on Sunday	22	18.5
			Express & Sunday Express	25	21.0
Tabloid	59	49.6	Mirror & Sunday Mirror	41	34.5
			The Sun & News of the World	18	15.1
	119	100.0		119	100.0

because they could cause readers to form an inaccurate impression of what body sizes range is considered to be obese, particularly if these skewed perceptions are reinforced repeatedly over time. In answering the second research question, we analyse the occurrence of a set of potentially stigmatising and stereotyping features in images, and how the appearance of these features relates to the body size represented. To our knowledge, this is the first content analysis of UK newspapers' coverage of obesity that analyses both images and text, and the first that employs visual estimates of body size.

METHOD

Sample Selection and Collection

A representative sample of five national daily UK newspapers and their corresponding Sunday counterparts were selected. The selection represented three genres, and consisted of one 'serious' newspaper (The Independent & The Independent on Sunday), two 'mid-market tabloid' newspapers (The Daily Mail & The Mail on Sunday; The Express & The Sunday Express) and two 'tabloids' (The Mirror & The Sunday Mirror; The Sun & The News of the World). This typology has been used in other analyses of print media discourse to select a broad sample of newspapers with various readership profiles and political orientations [41]. Publications were chosen on the basis of having high circulation figures (www.nrs.co.uk) and indicating the inclusion of images in their database entries for articles.

Keyword searches were conducted on the Nexis UK and NewsBank databases to identify articles related to obesity published between 1st January 1996 and 31st December 2010. The time period was chosen to incorporates a short period prior to the WHO's 1997 warning about the obesity epidemic [42] and the subsequent rise in newspaper reporting on obesity over the following 15 years [8]. An initial search was carried out for articles featuring the search terms "obesity", "obese", "fat nation", "fatties" or "lardy" in the headline. To determine relevant search terms, two researchers read a selection of articles about obesity and noted terms that were used commonly.

The initial search retrieved 3,878 articles. The articles were manually sorted based on two initial inclusion criteria: human obesity must be the primary topic of the article, and the article must not be from the letters, television guide or television reviews sections of the publication. Following

application of the inclusion criteria, 1,698 relevant articles were retained. The remaining articles were scrutinised for indications that they contained images, either in the form of references to an image in the text, or in the inclusion of image captions. Of the 1,698 relevant articles, 344 indicated that they contained images. As the online newspaper databases used do not store images with articles, original printed copies of the articles were retrieved from the newspaper archives of the National Library of Scotland (NLS). Due to limitations of the archives, 133 of the list of 344 articles with images were retrieved. These 133 images were each examined, and those that were cartoons or did not feature people were excluded. The final sample comprised 119 articles and images (Table **1**). In the case of articles that contained more than one image, the largest or most prominent image was used. If more than one person was pictured in the image, the most central or prominent person was used.

The Figure Rating Scale

A figure rating scale was used to assess subjects' body sizes. Figure rating scales are commonly used in studies of body image disturbance [43] and generally do not include BMI values. For this study it was necessary to use a scale that attributes a BMI value to each portrait so that body sizes observed by the coders could be assigned to BMI categories. The body image instrument developed by Pulvers and colleagues [44], which has been tested for content validity, was chosen, and BMI values ranging from 16 to 40 were applied to each portrait in increments of three BMI points based on the authors' guidance [44, p.1642] (Fig. **1**). Coders identified the portrait on the scale that most closely resembled each newspaper image, and assigned each image a rating between one to nine accordingly. To minimise the effect of the pre-existing knowledge of the BMI scale, BMI values and categories were not included in the scale provided to coders. Values and categories based on World Health Organisation [3] classifications have been included in Fig. (**1**) for illustrative purposes.

The Coding Frame

A coding frame for recording features of the images and articles was developed. Researchers (CP, SH) examined images to create thematic categories capturing information about image subjects and the contexts in which they were photographed. Additional categories were developed to record descriptive details of articles including publication
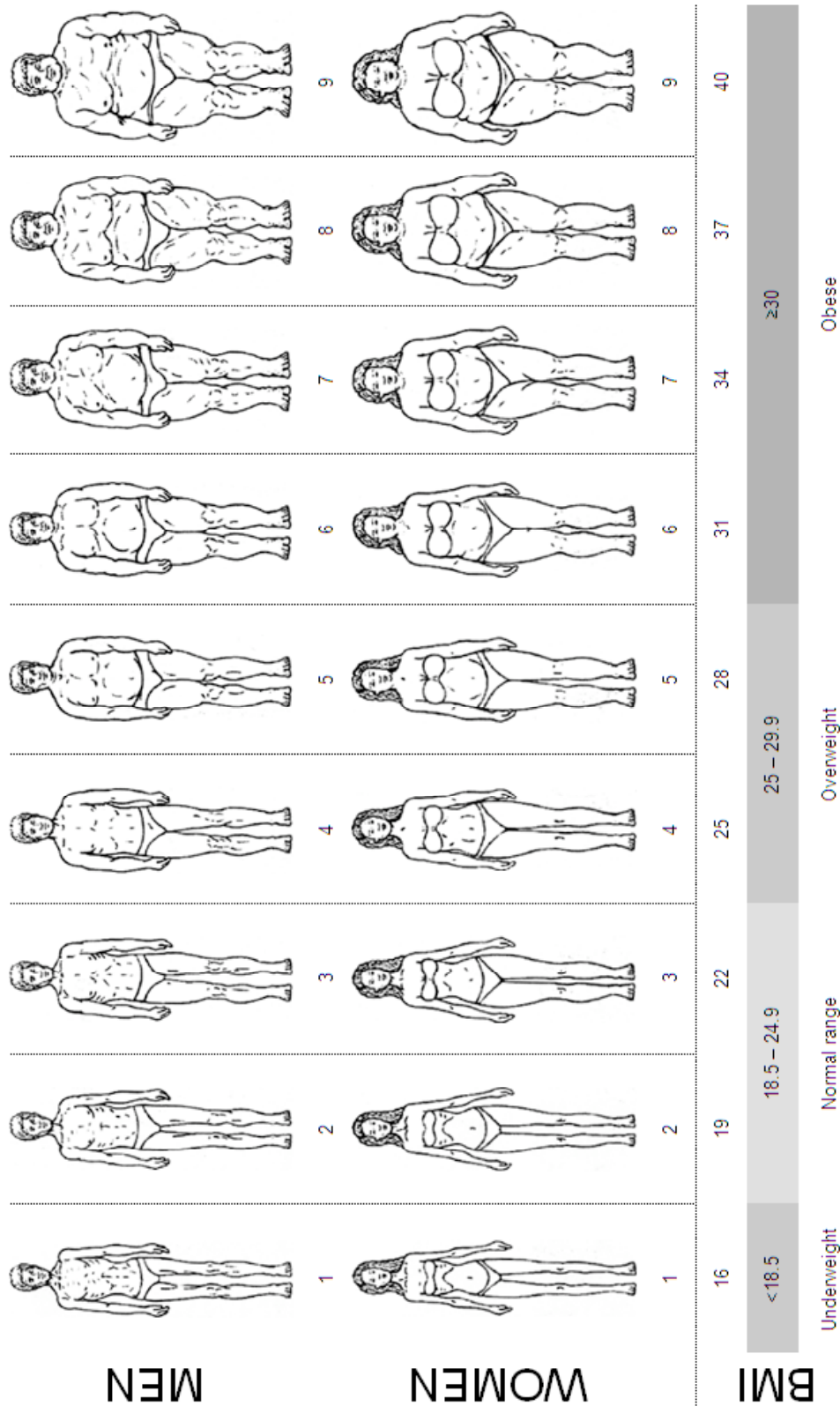
Fig. (1). Visual BMI rating scale adapted from Pulvers and colleagues' (2004) body image instrument.

date, publication title and how the subject's body size is described in the text. While articles did not always specifically describe their image subjects' body size, such as when a stock image was used to illustrate obesity in general, coders attributed the predominant body size description used in the article to the image used to illustrate it. This approach was chosen to take into account the associations that the reader might perceive, rather than associations that the author may have intended to create.

The initial coding frame was piloted with seven researchers who coded batches of images and suggested

further improvements. The final coding frame included two contextual codes and eleven conceptual codes. The contextual codes comprised a unique identification code assigned to each image, and the caption associated with the image, if any. Conceptual codes comprised: body size described in article text; sex; age group; clothing; pose; body parts visible; body angle depicted; photography location; facial expression; the presence of family or others in the image; and obesity-related behaviours depicted.

CODING AND ANALYSIS

The thematic content of each image and its accompanying text were coded by CP. The body size depicted in each image was coded by four coders who assigned each image a value between one and nine using the figure rating scale. Using four coders ensured that any systematic coding biases could be identified. Discrepancies between coders' evaluations of images allowed researchers to identify images that were posed in such a way that parts of the body were obscured, making reasonable estimations of body size difficult to achieve. Those images that produced significant disagreement between coders were not coded. The coded images were assigned BMI categories based on WHO classifications [1]: a BMI between 18.5 and 24.9 was considered to be 'normal range', 25-29.9 'overweight' and 30+ 'obese'.

Data from completed coding frames were entered into SPSS 15. A key part of the analysis was identifying the degree to which articles' written descriptions of subjects' body sizes agreed with coders' evaluations of those body sizes. Any articles in which the written descriptions of subjects differed from coders' evaluations could be interpreted as misrepresenting body size, and if a large proportion of articles in the sample were found to be misrepresentative, this might be indicative of a trend of misrepresentation of body size in newsprint coverage of obesity.

Fleiss' Kappa was used to measure inter-rater agreement between coders' ratings of image subjects' BMI categories, and Cohen's Kappa was used to measure agreement between article authors' written descriptions and coders' visual evaluations.

RESULTS

Sample Characteristics

The sample comprised 119 images from articles published between 1998 and 2010 (Table **1**). Almost half of subjects were males (n=53) and just over half female (n=64). The sex of two subjects could not be determined. A third (n=39) of subjects were assessed to be young children (≤12 years), a tenth (n=12) teenagers (13-18 years), and half (n=58) adults (≥19 years). The age groups of ten subjects could not be determined. Almost two thirds (n=74) of subjects were pictured alone, and a third (n=45) with others. Two thirds (n=79) of subjects were dressed in casual clothes, 17 were smartly dressed and three were depicted as untidy. Five subjects wore clothing associated with being a medical patient, while a tenth (n=14) of subjects were partially clothed (Table **2**).

Subject behaviours

Subjects' obesity-related behaviours were recorded. Five were pictured watching television, and 28 were pictured with food, often junk food. Subjects' poses were also coded. A quarter (n=29) were sitting or reclining, six engaged in exercise and the remaining 82 (68.9%) were standing or walking. Of those subjects with visible facial expressions, 37 (45.1%) were happy, 10 unhappy and 35 (42.7%) neutral (Table **2**).

Varying Descriptions of Body Size

Eighty-three articles described subjects' body sizes in the article text. Ten were described as 'normal' (including 'healthy' and 'slim'), 13 as overweight and 60 as obese. Coders assessed the body sizes of 105 (88.2%) subjects using the figure rating scale. Fourteen were not coded because they were either too small or awkwardly posed to be evaluated reliably, highlighted by a lack of agreement between coders. Of the subjects coded, seven were judged to be in the 'normal' weight range (BMI 18.50-24.99), 13 overweight (BMI 25.00-29.99) and 85 obese (BMI 30.00+). Of the seven images coded as normal weight, four were of individuals who were once obese but had lost weight, two were from articles about exercise classes in schools, and one was from a story about a trend of dieting among girls aged between 11 and 16. A Fleiss' Kappa test of agreement on BMI category between the four coders returned a Kappa of 0.617, which can be interpreted as substantial agreement [45].

Articles' descriptions of body sizes were compared with coders' estimates of those subjects' body sizes. A Cohen's Kappa test of agreement returned a result of 0.361, which can be interpreted as fair agreement [45]. Table **3** provides an overview of the lack of agreement between descriptions and coders' estimates. Of the eight subjects estimated by coders to be overweight, two were described as overweight and the remaining six as normal. Of the 64 subjects coded by coders as obese, one was described as normal range, 10 overweight and 53 obese. Table **4** details the distribution of the BMI values of the 53 subjects that were both described in article text as 'obese'. On the figure rating scale (Fig. **1**), the obese category is represented by portraits **6**, **7**, **8** and **9**, representing BMI values 31, 34, 37 and 40 respectively. Table **4** demonstrates that BMI values were not evenly distributed between subjects described by articles as being obese. Subjects tended to represent higher BMI values within the obese range, and the most commonly represented BMI value was 40.

Relationships Between Body Size and other Characteristics

Researchers recorded the angle from which each subject was photographed and the visibility of each subject's face. The 10 subjects described as normal weight range were all pictured with their faces visible and facing the camera. Of the 37 subjects shown without their faces visible, five were described as overweight and 28 obese (Table **2**).

Subjects described as overweight or obese were depicted as untidy, casually dressed, wearing clothing associated with being a medical patient, or partially clothed more frequently

Table 2. Subject Characteristics and Behaviours

	Body Type Described in Text							
	Normal Weight		Overweight		Obese		Not Described	
	(n=10)		(n=13)		(n=60)		(n=36)	
	Count	%	Count	%	Count	%	Count	%
Sex of subject								
Male	2	20.0	6	46.2	28	46.7	17	47.2
Female	8	80.0	7	53.8	30	50.0	19	52.8
Unknown	0	0.0	0	0.0	2	3.3	0	0.0
Age group								
Child (0-12)	1	10.0	8	61.5	16	26.7	14	38.9
Teenager (13-18)	1	10.0	0	0.0	6	10.0	5	13.9
Adult (19+)	8	80.0	5	38.5	29	48.3	16	44.4
Age unknown	0	0.0	0	0.0	9	15.0	1	2.8
People in picture								
Subject alone	6	60.0	5	38.5	41	68.3	22	61.1
With others	4	40.0	8	61.5	19	31.7	14	38.9
Sedentary activities								
Yes	0	0.0	0	0.0	5	8.3	0	0
No	10	100.0	13	100.0	55	91.7	36	100
Eating								
Yes	0	0.0	2	15.4	19	31.7	29	80.6
No	10	100.0	11	84.6	41	68.3	7	19.4
Pose of subject								
Reclining/sitting	0	0.0	4	30.8	15	25.9	10	27.8
Standing still	10	100.0	7	53.8	29	50.0	19	52.8
Moving	0	0.0	2	15.4	14	24.1	7	19.4
Facial expression								
Happy	9	90.0	2	15.4	8	13.3	18	50.0
Unhappy/neutral	1	10.0	6	46.2	24	40.0	14	38.9
Not visible	0	0.0	5	38.5	28	46.7	4	11.1
Clothing								
Untidy	0	0.0	0	0.0	3	5.1	0	0.0
Casual	6	60.0	6	46.2	43	72.9	24	66.7
Smart	3	30.0	2	15.4	5	8.5	7	19.4
Medical	0	0.0	1	7.7	3	5.1	1	2.8
Partially clothed	1	10.0	4	30.8	5	8.5	4	11.1

Table 3. Text Descriptions of Body Size Compared with Coder Estimations

Body Type Described in Text	Body Size Estimated by Coders			
	Normal Range	Overweight	Obese	Total
Normal range	2	6	1	12
Overweight	0	2	10	16
Obese	0	0	53	72
Total	2	8	64	100

Note: The total number of images represented in this table (100) is less than the whole sample (199) because 19 articles did not describe the body type of the image subject

Table 4. Distribution of BMI of Subjects Described as Obese (n=53)

Median figure rating scale score[1]	6.0	6.5	7.0	7.5	8.0	8.5	9.0
Approximate BMI value	31.0	32.5	34.0	35.5	37.0	38.5	40.0
Count	0	0	7	7	14	8	17
Percentage	0.0	0.0	13.2	13.2	26.4	15.1	32.1

1. Median average of the four scores attributed to each image by coders using the image rating scale (Figure 1)

than those described as 'normal' weight (Table **2**). Subjects described as overweight or obese had unhappy expressions more commonly than did those described as normal weight (Table **2**). Only subjects described as obese were pictured engaged in activities associated with sedentary lifestyles (n=5), and they were more commonly photographed eating (n=19) than were those described to be of other body sizes. No subjects described as being of normal weight were untidy, wearing medical clothing, pictured with unhappy or obscured facial expressions, engaged in sedentary activities or eating (Table **2**).

DISCUSSION

The findings help to illustrate two mechanisms by which newspapers may contribute to the normalisation of obesity. Firstly, we identified statistically significant disparity between the articles' descriptions and coders' evaluations of subjects' body sizes. Subjects were frequently of higher BMI categories than they were described in the accompanying text, suggesting that the journalists may have a tendency to underestimate their body sizes. Secondly, we showed that BMI is neither evenly nor normally distributed between subjects described by articles as obese; as nearly three quarters of these subjects represented BMI values of 37 or higher, and nearly one third represented a BMI of 40, often categorised as 'morbidly obese' [46]. This distribution suggests that newspapers tend to use images of relatively extreme obesity to illustrate articles about obesity. In addition, the negatively skewed BMI distribution within obese subjects in the sample differs starkly from the positively skewed distribution of BMI values within the obese population of the UK [47].

These findings are not, in isolation, evidence of the normalisation of obesity. However, when considered in light of the power of news images to influence readers' perceptions [34, 35], our findings illustrate how newsprint

misrepresentations may play a role in reinforcing and exacerbating misconceptions about body size. If the trends identified in this study are extant in wider mass media reporting on obesity, they may play an important role in determining societal perceptions of obesity, and therefore a role in driving the normalisation of obesity. Normalisation is important because it may prevent overweight and obese individuals from adopting healthy lifestyles, and wider society from embracing legislative solutions to obesity [17, 18].

In addition to normalisation, signs of stigmatisation were identified. The findings echoed those of previous research [37, 38], highlighting a tendency for newspaper photographs of overweight and obese individuals to include negative stereotypes that may reproduce weight stigma. Compared with subjects described as normal weight, subjects illustrating overweight and obesity were more frequently depicted with unhappy or neutral facial expressions, obscured heads or faces, and eating food, often junk food. Unhappy or neutral facial expressions may stigmatise overweight and obese individuals as unhappy or deserving of pity. Excluding subjects' heads or faces, while likely intended to protect the subject's privacy, may serve to dehumanise overweight and obese people. Depicting subjects eating food, while not an inherently unhealthy behaviour in itself, may serve to focus readers' attention on individual overeating as a driver of obesity to the exclusion of other drivers, which could reinforce the stereotype of the obese individual being to blame for a lack of self-control, and undermine the roles of social and environmental drivers of obesity. These trends could be harmful if found in wider mass media coverage of obesity, serving to reproduce negative stereotypes of obesity, leading to further prejudice, discrimination and damage to psychological and physical health [28].

Certain limitations of the research should be taken into account. Firstly, compromises were unavoidable in choosing the coding instrument. Figure rating scales are predominantly used to study body image perception, not for evaluating BMI. Furthermore, visual estimation is a much less reliable measure BMI than physical measurements. Despite this, visual estimation of BMI is used routinely by doctors, not necessarily with the aids of graphical scales, to diagnose patients' BMI [40]. In a blind study of cardiology doctors' visual estimations of BMI, Husin and colleagues [40] found that 81% of obese patients were correctly estimated to be obese, with the remaining obese patients were estimated to be overweight. Additionally, the scale used was initially designed for measuring body image perception in African Americans, while the majority of the image subjects in our sample were Caucasian, and body composition is known to vary by ethnicity [48]. While acknowledging the compromises made in choosing a scale, we are confident that the instrument represented a robust tool for a relatively novel research design. The implementation of a team of coders blind-coding each images allowed individual systematic coding biases to be eliminated. Images that were difficult to code due to their composition or the subject's pose were identified by substantial disagreement between coders, and removed accordingly, and a Fleiss Kappa test of inter-rater agreement indicated substantial agreement on the remaining images. Any uniform bias among the coders could not be detected. However, if any uniform bias existed, Husin and colleagues' [40] findings suggest that coders were likely to underestimate subjects' BMI values. If this were found to be the so, it would logically follow that the disparities between article text descriptions and image subjects' true BMI categories were greater than our findings suggest, which would strengthen the conclusion that newsprint representations misrepresent the range of body sizes classed as obese.

The second limitation of the study is its sample size. Inconsistencies in data about images in online newspaper article databases and the incompleteness of the library archive meant that the final sample of 119 articles and images was smaller than we anticipated. As a result, the trends identified in the sample cannot necessarily be generalised to wider newsprint coverage. In addition, the sample size limited our ability to analyze how variables such as publication genre and publication date related to articles' representations of obesity. Inconsistencies and incompleteness in the database and archive may also have produced the variation in the number of articles published in different publications. For example, the relatively high frequency of illustrated articles about obesity in the Mirror & Sunday Mirror could result from between-publication variations in the way that specific elements of articles are submitted to the database.

However, there is no reason to believe that these articles and images were in any way atypical. In addition, due to the disproportionately powerful influence of news images, compared to that of article text [34, 35, 36], it seems reasonable to suggest that the images analysed may have influenced readers' perceptions more than would text-only articles.

The third limitation of the study is inherent to content analysis; one can only describe the content of material, and cannot provide insight into its creators' motives or intentions. This is particularly relevant to newspaper articles as they can be modified by a number of individuals from inception and publication, each of whom may have different motivations. Furthermore, images may have been chosen by a picture editor working independently of the original author of the text. In addition, analysing media content alone cannot tell us what messages the audience will take away, as forming meaning is a collaborative process between the text and the audience, and the context within which the text is consumed plays a role in how it is interpreted [49]. However, regardless of the intent of publishing decisions, the final article presented to readers is important, due to the role of media portrayals in influencing public understandings of health issues [12].

Further research in this area might benefit from these limitations being taken into account in their research design. Firstly, a figure rating scale designed specifically for visually estimating BMI, with normative BMI values for each portrait, would be of value. Secondly, taking into account the difficulties inherent to sourcing newspaper articles with images, further research might benefit from focusing instead on online news articles, as did Heuer and colleagues [38]. In addition, researchers interested in images of obesity may find that images are more numerous in other news media, such as magazine articles or television news, and there may be value in comparing images in articles about obesity with images in unrelated articles. The issue of the complex authorship of newspaper articles may warrant study in itself, which could investigate the roles and motivations of the personnel involved in putting together an article. As Gibson and Zillmann [50] suggest, journalists should be aware of the potentially harmful power of news images. This study adds to evidence that could lead news media producers with an interest in accuracy and integrity to consider their editorial processes with regard to illustrative images. If editors wish to illustrate obesity to readers in an accurate, informative and socially-responsible manner, they might consider seeking illustrative images that represent the full range of body sizes within the obese category and avoiding images that reinforce negative stereotypes of obesity. Alternatively, if public health campaigners wish to combat misleading and negative images of obesity, they might consider developing informational campaigns aimed specifically at counteracting those images.

Mass media coverage can influence how ideas develop, spread and enter public discourse [12]. This study suggests that there may be a tendency for newspapers to misrepresent the range of body sizes within the obese category, and disproportionately use images of extreme obesity to illustrate general societal obesity. These trends demonstrate a possible mechanism by which newspapers might contribute to the normalisation of obesity in society. This study also contributes to existing literature on mass media stigmatisation of obesity [37, 38], demonstrating how newspapers' photographic representations of overweight and obesity could serve to reinforce stigmatisation. In conclusion, this study contributes to a growing body of literature on mass media portrayals of obesity. It does so by illustrating two ways in which newspapers' pictorial

depictions of overweight and obesity could harm both public understanding and public healthy: by exacerbating a process of normalisation that distorts public perceptions of healthy weight; and by contributing to the stigmatisation of overweight and obesity that harms the psychological and physical health of overweight and obese individuals [28].

CONFLICT OF INTEREST

The authors confirm that this article content has no conflicts of interest.

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Theme I: Representations of public health issues

Paper III

PATTERSON, C., EMSLIE, C., MASON, O., FERGIE, G. & HILTON, S. 2016a. Content analysis of UK newspaper and online news representations of women's and men's 'binge' drinking: a challenge for communicating evidence-based messages about single-episodic drinking? *BMJ open,* 6**,** e013124.

BMJ Open

Content analysis of UK newspaper and online news representations of women's and men's 'binge' drinking: a challenge for communicating evidence-based messages about single-episodic drinking?

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ABSTRACT

Objectives: In the UK, men's alcohol-related morbidity and mortality still greatly exceeds women's, despite an increase in women's alcohol consumption in recent decades. New UK alcohol guidelines introduce gender-neutral low-risk alcohol consumption guidance. This study explores how UK newspaper and online news represent women's and men's 'binge' drinking to identify opportunities to better align reporting of harmful drinking with evidence.

Design: Quantitative and qualitative content analysis of 308 articles published in 7 UK national newspapers and the BBC News website between 1 January 2012 and 31 December 2013.

Results: Articles associated women with 'binge' drinking more frequently than men, and presented women's drinking as more problematic. Men were more frequently characterised as violent or disorderly, while women were characterised as out of control, putting themselves in danger, harming their physical appearance and burdening men. Descriptions of female 'binge' drinkers' clothing and appearance were typically moralistic.

Conclusions: The UK news media's disproportionate focus on women's 'binge' drinking is at odds with epidemiological evidence, may reproduce harmful gender stereotypes and may obstruct public understandings of the gender-neutral weekly consumption limits in newly proposed alcohol guidelines. In order to better align reporting of harmful drinking with current evidence, public health advocates may engage with the media with a view to shifting media framing of 'binge' drinking away from specific groups (young people; women) and contexts (public drinking) and towards the health risks of specific drinking behaviours, which affect all groups regardless of context.

Strengths and limitations of this study

- Quantitative and qualitative content analysis of a large, comprehensive, 2-year sample of UK national newspaper news and online news about 'binge' drinking.
- The findings illustrate how media portrayals of 'binge' drinking could be harmful, and identify opportunities for these portrayals to be better aligned with evidence.
- Content analysis facilitates understandings of the messages being presented to the public, but cannot determine the extent to which audiences' understandings are influenced by media representations of specific issues.
- Some findings may have differed if the data analysed had gone beyond text articles, for example, by incorporating images, video and social media content.

INTRODUCTION

While the gap between women's and men's excessive and harmful consumption of alcohol in the UK has narrowed in recent years,[1] men still drink more than women,[2] experience more drink-related health and social problems and face twice women's alcohol-related mortality (15.9–7.8 deaths per 100 000 population, respectively, in 2012).[2] National guidelines have typically issued different alcohol consumption guidance for men and women, with women being advised to drink less than men, but the UK have recently joined Australia and Portugal[3 4] in issuing the same low-risk consumption guidance for men and women, drawing on evidence that the health risks posed to each gender are similar at low-risk levels of consumption.[5] In light of this shift towards gender neutrality in alcohol consumption guidelines, it is timely to consider how gender differences in drinking behaviours are represented and perceived.

As with most health issues, popular perceptions of drinking are likely to be influenced by mass media representations,[6–8] and, in turn, differences in representations of women's and men's drinking are heavily influenced by how societies regulate gender roles.[9] Media content analysis cannot tell us if, and how, specific content influences audiences' understandings and behaviours, and content analysis findings must be considered with that inherent limitation in mind. Nonetheless, exploring media representations of men's and women's drinking behaviours allows us to examine how shared cultural values around alcohol are articulated and constructed,[10] which might inform efforts to improve media representations, and therefore public understandings, of harmful drinking behaviours.[11]

Research illustrates a clear gender divide in media portrayals of drinking behaviours, with men's drinking normalised and women's problematised. Day et al[12] found that UK newspapers frequently characterised women as departing from idealised notions of femininity in terms of appearance (eg, weight gain, deeper voices, loss of good looks) and motherhood (eg, reduced fertility and unborn children). They found that men were framed as violent, but partial responsibility for men's violence was attributed to women, who were framed as sexual predators invading traditionally male-dominated drinking environments. Conversely, Wood et al[13] found that UK newspaper coverage of proposed minimum unit pricing (MUP) policies presented women as being at 'risk of harm' from male aggression. Lyons et al[14] found that both young women's and young men's magazines framed binge drinking as normative, adult and professional, with young men's magazines associating men's drinking with traditional masculine images and deriding young women's drinking behaviours. Nicholls[15] found that UK television and newspaper news associated men's drinking with violence (both as perpetrators and victims) and women's drunkenness with unfeminine and undignified behaviours, such as loss of consciousness or partial nudity. Similarly, Atkinson et al[16] found that UK magazines targeted at teenagers depicted women's drinking as more problematic than men's, and portrayed women as 'behaving like men' in male spaces, sexualised and highly emotional.

As Nicholls[15] found, 'binge drinking', also called single-episodic drinking, is a key focus of media representations of harmful drinking; "problem drinking is less commonly associated with dependence and more commonly associated with binge, harmful and hazardous drinking". Herring et al[17] describe binge drinking as a 'confused concept' that has historically been, and continues to be, defined inconsistently. They suggest that 'binge' drinking is currently portrayed as a youth issue, despite evidence that single-episodic drinking is performed by various age groups,[2] highlighting a potential area of media misrepresentation of population drinking behaviours. Qualitative evidence indicates that young women in Scotland define 'binge' drinking in terms of types of behaviour rather than the quantity of alcohol consumed,[18] which may present an obstacle to clearly and objectively defining 'binge' drinking. Mixed-method evidence suggests that both male and female students in England perceive binge drinking and public drunkenness as masculine behaviours.[19] Two studies based on qualitative data from New Zealand have highlighted the role of alcohol-related behaviours in young people's gender identities. First, Willott and Lyons[20] found that young men and women perceived consuming large quantities of alcohol in a single episode (among other behaviours) as a key performance of masculinity, and highlighted the identity negotiations undertaken by men who do not engage in these normative, masculine drinking behaviours. Second, Hutton et al[21] examined the challenges that young women experience in curating social media personae that balance engagement in 'the culture of intoxication' (ref. 21, p. 88) with maintaining respectability. Given the primacy of binge drinking in UK media coverage of harmful alcohol use,[15] binge drinking is an important lens through which to examine gendered representations of drinking behaviours.

This study comprises a comprehensive, mixed-methods content analysis of 2 years of UK media coverage of binge drinking, designed to contribute new insights into a growing body of literature about gendered media representations of alcohol, with a particular focus on binge drinking. Our aim is to improve understandings of UK newspaper and online news representations of women's and men's 'binge' drinking, focusing not on how 'binge' drinking is defined, but rather on how different types of drinking behaviour are gendered in media content where those behaviours are labelled as 'binge' drinking. While the limitations of media content analysis must be taken into account, the improved understandings produced by this research may help to inform efforts to better align media representations of harmful drinking with current evidence, which could in turn improve public understandings of the risks of single-episodic drinking.

METHODS

We selected seven highly circulated[22][23] UK national newspapers, including their Sunday counterparts, and the most-read exclusively online news website[24] (table 1). The chosen newspaper publications represented three genres: quality, middle-market tabloid and tabloid. This typology helps to ensure a sample that represents diverse readerships in terms of age, social class and political alignment.[25] Quality newspapers are those that were traditionally printed in broadsheet format, have predominantly middle-class audiences, are politically diverse and are serious in tone. Middle-market tabloids are printed in tabloid format and are less serious in tone than quality-genre newspapers, and have a predominantly older, middle-class, right-wing audience. Tabloids are less serious and typically more sensationalist than middle-

Table 1 Summary of publications and articles in the sample

| | | Article format | | | | | | | |
| | | All articles | | Standard | | Feature | | Editorial | |
Genre/medium	Publication	n	Per cent	n	Per cent	n	Per cent	n	Per cent
Quality (n=86)	Guardian/Observer	58	18.8	48	20.3	9	17.3	1	5.3
	Independent/Independent on Sunday	17	5.5	11	4.6	5	9.6	1	5.3
	Daily Telegraph/Sunday Telegraph	52	16.9	44	18.6	5	9.6	3	15.8
Middle-market tabloids (n=39)	Daily Mail/Mail on Sunday	54	17.5	33	13.9	18	34.6	3	15.8
	Express/Sunday Express	13	4.2	8	3.4	3	5.8	2	10.5
Tabloids (n=75)	Daily Mirror/Sunday Mirror	13	4.2	10	4.2	2	3.8	1	5.3
	The Sun/News of the World	62	20.1	46	19.4	9	17.3	7	36.8
Online (n=39)	BBC News website	39	12.7	37	15.6	1	1.9	1	5.3
	Total	308	100	237	100	52	100	19	100

market tabloids, are politically diverse and have predominantly working-class audiences.

We selected a search period of 1 January 2012 to 31 December 2013, during which alcohol was subject to heightened media interest due to debates in the UK and Scottish parliaments around MUP.[26] Much of the media coverage of MUP was related to 'binge' drinking due to the UK Government's Alcohol Strategy[27] overtly positioning 'binge' drinking as the primary target of MUP. Relevant newspaper articles were identified using the Nexis database including articles from online editions of the two of the selected publications (The Guardian and The Daily Mail) that are archived in Nexis. BBC News articles were identified using the search function on the BBC website. The search string identified articles that contain both three or more mentions of 'binge' and one or more mentions of 'drink OR drinker OR drinkers OR drinking'. Duplicate articles were removed, and articles were manually excluded if they did not predominantly focus on binge drinking in the UK, or if they were not in the news, feature or editorial formats. Initial searches identified 537 articles, of which 308 met the inclusion criteria and were eligible for detailed coding and analysis.

To systematically and comprehensively code and analyse the media content, we used a mixed-methods content analysis. First, we used quantitative content analysis to measure the frequency of content within the articles across the whole sample, and second, we performed qualitative content analysis of the content of a subsample of articles for more in-depth, reflexive analysis.[28] From this perspective, quantitative content analysis is concerned with measuring and analysing manifest content (the surface-level content of the articles, the coding of which does not require interpretation on the part of the coder such that it can be recorded relatively objectively), while qualitative content analysis is concerned with latent content (the underlying meanings of the text, as interpreted by coders in an inherently

subjective process).[29] The mixed-methods approach in this research comprised the following steps: constructing a coding frame; coding manifest content using the coding frame; establishing the reliability of the data collected and excluding unreliable data; analysing the quantitative data; identifying aspects of manifest content to examine further using qualitative analysis; and finally performing thematic analysis of the latent content of articles containing the manifest content of interest.

To construct a coding frame with which to code manifest content, SH and CE read randomly selected articles from the sample in batches of 20, recording potential thematic categories relevant to the research topic as they emerged. At the point where a batch of articles was read without any new categories emerging, the list of categories was deemed to have reached saturation. The collected thematic categories were grouped into three broad thematic categories: How is binge drinking described and which sections of the population are associated with this behaviour?; How are the drivers of the binge drinking described and who is to blame?; and What are the consequences of binge drinking? These categories were chosen by a combination of a priori knowledge of the research topic and understandings of the content of the sample that emerged from close reading of the articles.[26] The final coding frame comprised the three broad thematic categories and their subcategories, as well as fields to record more routine details of articles, such as publication, article format and word count. In addition, coders recorded whether each article mentioned men and women, allowing articles to be divided into four gender categories: those that mention women exclusively, those that mention men exclusively, those that mention both men and women and those that mention neither men nor women explicitly. These codes enabled analysis of whether themes varied by the gender focus of articles.

To collect quantitative data, OM read each article in turn, using the coding frame to record whether each

theme was present within its manifest content. To ensure consistency of coding, GF coded a random subsample of 39 articles (12.7%). Linearly weighted κ tests of inter-rater agreement between OM and GF were then performed on each variable across those 39 double-coded articles, and variables that returned a coefficient below 0.8 were discarded from the study to ensure that only variables with strong agreement were retained for analysis. The coding frame data were then entered into SPSS for analysis. Statistical procedures comprised: a simple linear regression examining the relationship between publication quarter and the count of articles published; χ^2 tests of whether thematic variables varied by gender focus, publication genre or article format; and paired t-tests comparing the means of thematic variables. The threshold of statistical significance is set at 0.01 throughout to mitigate the risk of type 1 errors.

Following quantitative analysis, the thematic category of 'harms to appearance' was deemed noteworthy and suitable for qualitative coding and analysis. The decision to focus on that theme was informed by stark gender differences in content that emerged from the quantitative analysis, and an expectation that valuable understandings could be gained from deeper analysis. To analyse the latent content of the 46 articles that had been coded as mentioning 'harms to appearance', GF and CP employed a thematic analysis approach[30] using NVivo V.10, closely reading each article to generate initial codes, which were then collated into potential themes. GF and CP collaborated closely to assure that the themes were defined clearly and that they worked across the 46 articles. The findings from the thematic analysis are presented in terms of two broad themes, using typical quotations to illustrate article content.

RESULTS
Quantitative findings
Between 1 January 2012 and 31 December 2013, 308 articles about binge drinking were published in the seven print publications and one website included in the sample. Of these articles, 86 (27.9%) were published in 'quality' newspapers, 39 (12.7%) in middle-market tabloids, 75 (24.4%) in tabloids and 108 (35.1%) on BBC News (table 1). The majority of articles were standard news format (n=237, 76.9%), while 52 (16.9%) were feature articles and 19 (6.2%) editorials. The frequency of articles published per quarter decreased across the 2-year period (figure 1), but publication quarter was not a statistically significant predictor of article frequency (coefficient −6.714, p=0.088). There was a peak of 56 articles in March 2012, 66.1% of which were related to MUP, in particular the UK Prime Minister's announcement of plans to introduce MUP. There was elevated reporting from November 2012 to January 2013 (n=62), during which 53.2% of articles mentioned MUP, largely related to opposition to MUP within the UK Cabinet. In total, 133 (43.2%) articles mentioned MUP.

Articles were coded according to whether they mentioned binge drinking in women exclusively (n=68, 22.1%), men exclusively (n=30, 9.7%), both men and women (n=43, 14.0%), or neither men nor women explicitly (n=167, 54.2%). To be coded as mentioning both men and women, an article had to include specific discussion of each gender individually. There were no significant associations between gender category and either genre (p=0.382) or article format (p=0.303). Furthermore, neither publication genre nor article format was significantly associated with differences in reporting on any of the thematic categories listed in table 2.

Articles were coded to identify the characteristics of binge drinkers and the specific drinks associated with binge drinking. Thirty-two (10.4%) of all 308 articles associated mothers (including pregnant women) with binge drinking, which differed significantly (p<0.000) from the 11 (3.6%) that mentioned fathers (table 2). There were no statistically significant relationships between gender focus and mentioning either younger or older people. While more articles that mentioned binge drinking in the home were focused exclusively on women, no drinking location was significantly associated with gender category (table 2). Wine (n=58, 18.8%) was the only type of drink significantly associated more with one gender than the other, being predominantly mentioned in articles focusing exclusively on women (p=0.004).

Almost two-thirds of articles (n=192, 62.3%) described health harms related to binge drinking, while one-quarter (n=77) mentioned risk of death. Mentions of specific categories of harm were recorded (table 2), and relationships between gender and specific harms were identified. Mentioning harms to appearance was significantly related to gender category (p=0.001); 19 of the 46 articles that mentioned harms to appearance mentioned women exclusively, while none of those 46 articles mentioned men exclusively. Harms to parenting were mentioned in 7 (10.3%) of the 68 articles that exclusively mentioned women, and none that exclusively mentioned men, but the difference was not significant (p=0.068). Sexual assault and rape were mentioned more frequently in articles exclusively mentioning women (n=9, 2.9%) than those exclusively mentioning men (n=4, 13.3%), but not significantly so (p=0.989). More articles directly associated the risk of death from drinking with men (n=16, 20.8%) than with women (n=8, 10.4%), and this difference was significant (p<0.000). Conversely, non-fatal physical health harms were associated with women (n=32, 23.2%) more frequently than men (n=11, 8.0%), albeit not significantly so (p=0.339).

Qualitative findings
As identified in the quantitative findings, just 8 of the 46 articles that reported on 'harms to appearance' mentioned men, and none did so exclusively. These 46
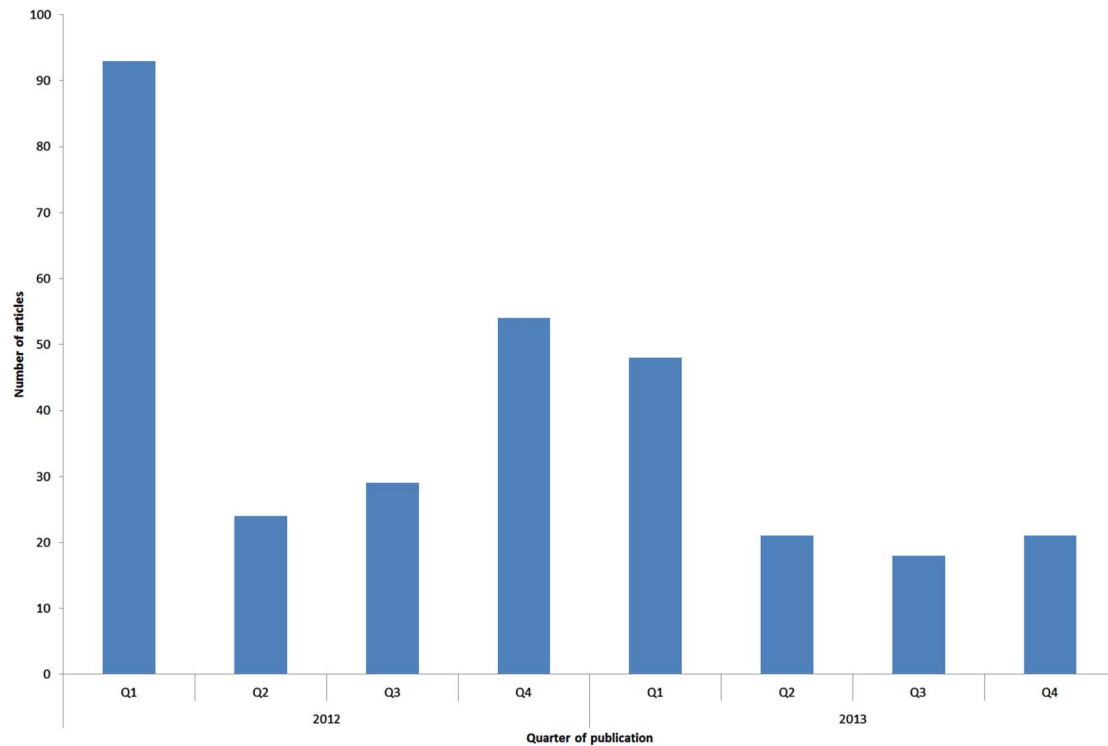
Figure 1 Frequency of publication of articles about 'binge' drinking by quarter.

articles were subjected to thematic analysis. A broad conceptualisation of 'harms to appearance' was used that included behavioural as well as aesthetic aspects of physical appearance that may be influenced (or perceived to be influenced) by single-episodic drinking. Using this broad definition, two key themes emerged from thematic analysis of the subsample: physical appearance and loss of self-control.

Physical appearance

Various harms to complexion were reported in relation to women, including the use of make-up to hide grey skin. Articles described specific damage to women's features, including hair, lips, noses and teeth, as well as using less specific descriptions of physical damage such as 'ravaged' (The Sun, 13 February 2012). An article headlined 'Lambrini ruined my looks in 5 months' (The Sun, 27 September 2013) associated an 'attractive' woman becoming 'a swollen, haggard wreck' with the consumption of a perry overtly marketed to young women. Weight gain caused by alcohol consumption was cited as both a product of alcohol use and a cause of 'drunkorexia', the practice of eating less to offset calories gained from alcoholic drinks.[31] Drunkorexia was typically associated with women; one article stated that it 'affects mainly young women' (Daily Mail, 19 July 2012) while another defined it as a condition in which 'calorie-conscious women skip meals in order to binge drink' (Mirror, 20 December 2012).

Within the few articles in the subsample that mentioned men, male partial nudity was related to drunken behaviours, such as lost and ripped clothes, and

intentional indecent exposure. Typifying this, the Daily Mail described a male student 'flashing his penis in the street and laughing at his own loutish behaviour' (19 June 2012). Conversely, partial nudity in women was more typically related to clothing choices presumably made while sober, with descriptions of revealing clothing, particularly miniskirts, and impractical shoes. One article described a fancy dress event in which 'undergraduate girls take to the streets dressed in little more than their underwear' (Daily Mail, 8 October 2012). Women were variously described as 'scantily-clad' (Daily Mail, 22 August 2012), 'half-naked' (The Sun, 3 March 2013) and 'nearly bearing all' (Daily Mail, 8 October 2012). Aside from choices of attire made in sobriety, harms to appearance that could befall women during drinking episodes included smeared makeup, vomit in hair, stained clothes and gravel embedded in knees. Articles also made mention of unintentional exposure of underwear or body parts by women, which was in contrast to men, who were typically described as exposed their genitalia deliberately.

Loss of self-control

Descriptions of women's and men's loss of physical control differed. Some articles depicted drunken women as burdening male partners. For example, two articles described women vomiting on their boyfriends, while one described female students needing 'to be carried back to their rooms by boyfriends' (Daily Mail, 19 June 2012). No articles characterised 'binge' drinking men as relying on, or burdening, their partners.

Table 2 Social groups, locations and harms associated with binge drinking

	All articles (n=308)		Only females (n=68)		Only males (n=30)		Both (n=43)		Neither (n=167)		χ2 p Value (all)	χ2 p Value (Female vs male)
	n	Per cent	n	Per cent	n	Per cent	n	Per cent	n	Per cent		
Who is binge drinking?												
Mothers (including pregnant women)	32	10.4	23	7.5	0	0.0	9.0	2.9	0.0	0.0	0.000*	0.000*
Fathers	11	3.6	0	0.0	0	0.0	11.0	3.6	0.0	0.0	0.000*	–
Young people (including children and students)	119	38.6	24.0	35.3	8.0	26.7	18.0	41.9	69.0	41.3	0.419	0.401
Older people	17	5.5	5	1.6	0	0.0	3.0	1.0	9.0	2.9	0.499	0.127
Which locations of binge drinking are mentioned?												
At home	46	14.9	14	4.5	1	0.3	10.0	3.2	21.0	6.8	0.047	0.029
On city streets	60	19.5	12	3.9	5	1.6	10.0	3.2	33.0	10.7	0.087	0.906
Pubs, bars and clubs	56	18.2	12	3.9	5	1.6	6.0	1.9	33.0	10.7	0.836	0.906
What types of drink are associated with binge drinking?												
Wine	58	18.8	23	7.5	2	0.6	11.0	3.6	22.0	7.1	0.001*	0.004*
Spirits	58	18.8	22	7.1	12	3.9	4.0	1.3	20.0	6.5	0.000*	0.464
Beer	51	16.6	10	3.2	8	2.6	10.0	3.2	23.0	7.5	0.193	0.159
Cider	26	8.4	4	1.3	5	1.6	4.0	1.3	13.0	4.2	0.343	0.880
Alcopops	9	2.9	5	1.6	0	0.0	1.0	0.3	3.0	1.0	0.093	0.127
Shots	5	1.6	3	1.0	1	0.3	0.0	0.0	1.0	0.3	0.129	0.804
Cocktails	4	1.3	2	0.6	1	0.3	0.0	0.0	1.0	0.3	0.308	0.917
Fortified wine	4	1.3	1	0.3	0	0.0	2.0	0.6	1.0	0.3	0.186	0.504
Sparkling wine	3	1.0	1	0.3	0	0.0	1.0	0.3	1.0	0.3	0.676	0.504
Liqueurs	2	0.6	1	0.3	0	0.0	0.0	0.0	1.0	0.3	0.754	0.504
Lambrini	2	0.6	2	0.6	0	0.0	0.0	0.0	0.0	0.0	0.069	0.343
What harms of binge drinking are mentioned?												
Any personal harms	38	12.3	11	3.6	6	1.9	8	2.6	13	4.2	0.062	0.645
Harms to relationships	21	6.8	5	1.6	6	1.9	2	0.6	8	2.6	0.022	0.068
Harms to parenting	24	7.8	7	2.3	0	0.0	7	2.3	10	3.2	0.042	0.068
Any economic harms	107	34.7	16	5.2	8	2.6	17	5.5	66	21.4	0.080	0.739
Harms to the NHS	103	33.4	16	5.2	8	2.6	16	5.2	63	20.5	0.153	0.739
Harms to economic productivity	11	3.6	2	0.6	0	0.0	1	0.3	8	2.6	0.551	0.343
Any social harms	138	44.8	25	8.1	15	4.9	17	5.5	81	26.3	0.319	0.219
Social disorder and violence	128	41.6	19	6.2	14	4.5	16	5.2	79	25.6	0.044	0.071
Sexual assault and rape	19	6.2	9	2.9	4	1.3	2	0.6	4	1.3	0.005*	0.989
Fear	15	4.9	0	0.0	0	0.0	2	0.6	13	4.2	0.044	–
Any health harms	192	62.3	40	13.0	21	6.8	26	8.4	105	34.1	0.755	0.293
Death	77	25.0	8	2.6	16	5.2	10	3.2	43	14.0	0.000*	0.000*
Physical health	138	44.8	32	10.4	11	3.6	14	4.5	81	26.3	0.215	0.339
Harms to appearance	46	14.9	19	6.2	0	0.0	8	2.6	19	6.2	0.001*	0.001*

*Statistically significant at the 0.01 level.
NHS, National Health Service.

Women's aggressive behaviours were limited to verbal conflict, with drunken women characterised as noisy, argumentative, emotional and hard to control. An article describing Cardiff nightlife reported that drunken women 'scream at their boyfriends in shop doorways' and 'sob in public' (Daily Mail, 21 August 2012). Men were more typically associated with aggressive behaviours, including violent language and actions, damaging property and non-specific 'loutish' (Daily Mail, 19 June 2012) behaviour. While male aggression was presented as endangering others, women were characterised as putting themselves at risk, sometimes of undesirable sexual situations and assault. One article reproduced Office of National Statistics data about fines for drunk and disorderly behaviour, presenting men as much more likely than women to receive such fines, but suggesting that the number of women receiving the fines is increasing more rapidly than men (Telegraph, 14 June 2009).

DISCUSSION

We examined UK newspaper and online news representations of 'binge' drinking, exploring differences and similarities in representations of women's and men's drinking behaviours. Our quantitative analysis identified that women were associated with binge drinking more frequently than men, which conflicts with epidemiological evidence[2] and young people's perceptions of 'binge' drinking as a masculine activity.[19] We found various differences in how binge drinking was represented in association with different genders. Motherhood was mentioned in relation to 'binge' drinking more frequently than fatherhood. There were significant gender differences in the attribution of health harms, with male 'binge' drinking frequently associated with mortality and female 'binge' drinking more frequently associated with morbidity. Women's drinking was typically presented as more problematic than men's, and notably, harms to appearance were associated with women's 'binge' drinking much more frequently than men's. The articles in our sample associated wine with women's 'binge' drinking significantly more than men's, but our data did not identify significant gender associations with other specific types of drink.

Our qualitative analysis focused on depictions of the relationship between 'binge' drinking and appearance, comprising aspects of physical appearance and behaviour. Women engaged in 'binge' drinking were presented as helpless, physically incapacitated and transgressive, and as burdens to male partners, who were sometimes cast as carers for drunken women. 'Binge' drinking men were associated with physical and verbal aggression, but not behaviours that marked them as weak or vulnerable; while women were characterised as endangering themselves, men were more likely to endanger others. Articles typically depicted women as less able than men to maintain socially acceptable behaviour during single-episodic drinking. 'Binge' drinking was characterised as affecting women's physical appearance more than men's. Articles associated binge drinking with both immediate and long-term damage to physical characteristics and self-presentation. Descriptions of binge drinking women's dress had a moralistic tone that was absent in representations of men, with articles typically focusing on degrees of nudity and implicitly questioning the propriety of women's chosen attire. Our analysis suggests that media representations of women's 'binge' drinking do not focus solely on the effects of binge drinking on women, but also reflect broader social expectations about women's public behaviours.

Measham and Østergaard[32] suggest that newspapers have constructed 'binge' drinking as a problem of young women adopting male behaviours:

> The public face of binge drinking, […] a staple of early 21st century tabloid newspapers, became the young woman emulating male consumption patterns […] with clothes askew stumbling around the city centre streets at night'.(p. 417)

There may be unintended consequences of this disproportionate focus on women's—as opposed to men's—single-episodic drinking in media reports. For example, it may reinforce harmful gender stereotypes by suggesting that drinking is more problematic for women than men, and may encourage victim blaming in relation to sexual assaults after drinking.[33] It is notable that the media's disproportionately frequent association of women with single-episodic drinking in our sample is at odds with young adults' perceptions of these types of drinking behaviours as being masculine.[19 20] One potential explanation for this is that news producers regard women's 'binge' drinking as being of greater interest than men's because it is a deviation from gender norms. Whether disproportionate media focus on women's single-episodic drinking might influence a shift in public perceptions of how such behaviours correspond to gender identities may be a question for further research.

Our findings build on the growing body of literature about gendered media representations of alcohol by focusing specifically on portrayals of binge drinking. Depictions of women as unable to control themselves physically and emotionally echoed the findings of Atkinson et al,[16] while the burden this weakness was depicted as placing on men could be seen as corroborating Day et al[12] finding that traditionally male-dominated drinking environments and activities are perceived to be threatened by women's increasing involvement. Day et als[12] finding that women were presented as making themselves vulnerable to male aggression was replicated in our finding that articles presented women as in danger, and men as dangerous. The depictions of women's dress and behaviours found in our analysis echoed Nicholls'[15] findings. We found that whole or partial nudity in males was typically presented as frivolous or ridiculous, while women's partial nudity was presented with an underlying morally loaded tone, perhaps resulting from women being perceived as publically breaking social conventions.

Our analysis supports Herring et al's[17] observation that 'binge' drinking is popularly conceived in terms of specific social contexts, rather than being defined purely in terms of exceeding a certain quantity of alcohol in a limited time. Media framing of 'binge' drinking as an activity of young men and women, often in public spaces, disproportionately emphasises the context of single-episodic drinking and contributes to constructing binge drinking as something many (including older people or those who drink in private settings) might not associate themselves with. The disproportionate association of 'binge' drinking with young peoples' public, often antisocial (although performed within in social groups), drinking could have a damaging influence if it leads those who engage in single-episodic drinking

outside of these contexts to misidentify their behaviours as harmless. The dominant narrative of 'binge' drinking may have become unhelpful as a health concept. As an alternative, it may be useful to draw a clear distinction in health communications between 'binge drinking', as an inconsistently defined, context-specific and value-laden term, and single-episodic drinking, as a specific, widespread and context-independent practice with a range of health consequences documented by research evidence.

Our findings have relevance to the development of alcohol guidelines. While the new UK guidelines propose gender-neutral low-risk consumption guidelines, the Department of Health acknowledges that men and women vary in their drinking behaviours and the long-term and short-term health risks they face.[5] Media associations of men with alcohol-related mortality and women with alcohol-related morbidity are in line with epidemiological evidence.[5] However, differences in how media coverage problematises women's and men's 'binge' drinking could promote perceptions of men's 'binge' drinking as less harmful than women's, potentially exacerbating men's harmful drinking behaviours and hindering public understandings and acceptance of the proposed guidelines.

Our conclusions are subject to limitations. While mass media's influence on public perceptions of health issues is extensively researched and well established,[6] content analysis alone cannot determine the extent to which audiences' understandings correlate with media representations; audiences are subject to many influences beyond print and online news media, and do not consume media content in a passive, non-critical way. Studying other forms of media, such as television or social media, could help create a more complete understanding of media representations of 'binge' drinking. Furthermore, a larger sample size, achieved by choosing a longer timeframe or including more publications, could have increased the validity of our conclusions. A potential limitation of the data used is that the Nexis database stores articles in text-only format, omitting any images included in the original articles. Coders noted that text-only articles that appear factual and impartial could be perceived as more morally loaded with the original photographs included. Similarly, some articles may only reveal implicit gender bias when viewed with the original photographs included; this is illustrated in an article about 'binge' drinking on The Sun's website that contains seven images of women drinking and none of men, while the text makes no mention of gender.[34] Finally, as the article search period concluded 2 years prior to the proposal of new alcohol guidelines, our analysis cannot tell us how representations changed immediately preceding, during or following the proposal. Further research might analyse how media coverage of alcohol guidelines represents 'binge' drinking and gender roles. Alternatively, comparative research could investigate whether media representations differed before and after the introduction of new guidelines. With these limitations taken into account, this comprehensive content analysis of a 2-year period of coverage contributes to understandings of gendered media representations of drinking, with a specific focus on 'binge' drinking.

In conclusion, our analysis suggests that popular representations of binge drinking may be harmful in three ways. First, if public audiences' understandings are influenced by media coverage of 'binge' drinking, associations of 'binge' drinking with certain demographics and situations could lead the public to underestimate the health risks of single-episodic drinking among those not typically depicted in 'binge' drinking narratives, particularly older people. Morally loaded representations of women's binge drinking may reproduce harmful stereotypes and stigma about the vulnerability of drunken women and the social unacceptability of female drunkenness. Finally, media content reinforcing a skewed representation of binge drinking may present a challenge to public health stakeholders seeking to promote evidence-based information, recommendations and policies with the goal of reducing alcohol-related health harms.

The misrepresentations identified by this research suggest that there may be a need for health advocates to engage with mass media to promote clear, evidence-informed messages about single-episodic drinking to help better align reporting on harmful drinking with evidence, with the ultimate goal of improving public understandings of harmful drinking behaviours. Media communication strategies may seek to avoid stereotypes of 'binge drinking' that implicitly define binge drinking in terms of social contexts and behaviours not directly related to alcohol consumption, instead offering clear, value-free definitions of single-episodic drinking based on specific quantities of alcohol and specific, time-bound episodes. Identifying the need to improve communication of single-episodic drinking is particularly relevant given the recent public consultation about new alcohol guidelines,[5] and the UK Government's decision not to include specific guidance on single-occasion alcohol consumption within the final guidelines.

Open Access

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Content analysis of UK newspaper and online news representations of women's and men's 'binge' drinking: a challenge for communicating evidence-based messages about single-episodic drinking?

C Patterson, C Emslie, O Mason, G Fergie and S Hilton

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Correction

Patterson C, Emslie C, Mason O, *et al*. Content analysis of UK newspaper and online news representations of women's and men's 'binge' drinking: a challenge for communicating evidence-based messages about single-episodic drinking? *BMJ Open* 2016;**6:** e013124. doi: 10.1136/bmjopen-2016-013124

In Table 1, the figures in parentheses in the first column are incorrect. The corrected Table 1 is shown below.

Table 1 Summary of publications and articles in the sample

Genre / medium	Publication	All articles n	All articles %	Standard n	Standard %	Feature n	Feature %	Editorial n	Editorial %
Quality (n=127)	Guardian / Observer	58	18.8	48	20.3	9	17.3	1	5.3
	Independent / Independent on Sunday	17	5.5	11	4.6	5	9.6	1	5.3
	Daily Telegraph / Sunday Telegraph	52	16.9	44	18.6	5	9.6	3	15.8
Middle-market tabloids (n=67)	Daily Mail / Mail on Sunday	54	17.5	33	13.9	18	34.6	3	15.8
	Express / Sunday Express	13	4.2	8	3.4	3	5.8	2	10.5
Tabloids (n=75)	Daily Mirror / Sunday Mirror	13	4.2	10	4.2	2	3.8	1	5.3
	The Sun / News of the World	62	20.1	46	19.4	9	17.3	7	36.8
Online (n=39)	BBC News website	39	12.7	37	15.6	1	1.9	1	5.3
	Total:	308	100	237	100	52	100	19	100

CrossMark

Theme II: Policy debates

Paper IV

PATTERSON, C., KATIKIREDDI, S. V., WOOD, K. & HILTON, S. 2014. Representations of minimum unit pricing for alcohol in UK newspapers: a case study of a public health policy debate. *Journal of Public Health,* 37**,** 40-49.

Representations of minimum unit pricing for alcohol in UK newspapers: a case study of a public health policy debate

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ABSTRACT

Background Mass media influence public acceptability, and hence feasibility, of public health interventions. This study investigates newsprint constructions of the alcohol problem and minimum unit pricing (MUP).

Methods Quantitative content analysis of 901 articles about MUP published in 10 UK and Scottish newspapers between 2005 and 2012.

Results MUP was a high-profile issue, particularly in Scottish publications. Reporting increased steadily between 2008 and 2012, matching the growing status of the debate. The alcohol problem was widely acknowledged, often associated with youths, and portrayed as driven by cheap alcohol, supermarkets and drinking culture. Over-consumption was presented as a threat to health and social order. Appraisals of MUP were neutral, with supportiveness increasing slightly over time. Arguments focused on health impacts more frequently than more emotive perspectives or business interests. Health charities and the NHS were cited slightly more frequently than alcohol industry representatives.

Conclusion Emphases on efficacy, evidence and experts are positive signs for evidence-based policymaking. The high profile of MUP, along with growing support within articles, could reflect growing appetite for action on the alcohol problem. Representations of the problem as structurally driven might engender support for legislative solutions, although cultural explanations remain common.

Keywords alcohol, policy, media, content analysis

Introduction

Mass media influence which issues are presented to the public, and how they are represented.[1] In a process called framing, media construct problems, causes and solutions by selectively presenting issues, choosing which components to mention or omit.[2–4] By setting agendas and creating frames, media influence public understandings.[1] Understanding framing may illuminate how public health policy debates play out in the media.

Alcohol contributes to health risks, social harms and economic burdens.[5] The United Kingdom's (UK) consumption has outpaced other western European countries, matched by declining health.[6] In the UK the Scottish, Northern Irish and Welsh administrative branches determine health policy within those regions, while the UK Government controls English health policy. Both the Scottish and UK governments have identified the need to tackle the alcohol problem,[7,8] and the role of legislation in doing so.

Affordability is known to drive alcohol purchasing, consumption and harm.[9] Minimum unit pricing (MUP) is an intervention designed to reduce alcohol purchasing and consumption by setting a uniform minimum price below which no unit of alcohol may be sold. Policymakers may be emboldened by the successes of smoke-free legislation, support for which increased following implementation.[10,11] Econometric analyses[12] and evaluations of comparable interventions outside the UK[13,14] suggest that price increases can reduce consumption and harms. UK consumers are consciously price-sensitive,[15] but some express concerns that MUP would unfairly affect moderate and low-income drinkers.[16] Conversely, modelling evidence suggests that the intervention

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would primarily affect harmful, low-income drinkers, with little impact on moderate drinkers.[17] Australian research identified public scepticism about disrupting alcohol culture with policy.[18]

The Scottish Parliament passed the Alcohol (Minimum Pricing) (Scotland) Bill into legislation in May 2012, but implementation is currently obstructed by legal challenges from the Scotch Whisky Association.[19] In March 2009, the UK Chief Medical Officer (CMO) recommended a 50p minimum price per unit for England and Wales.[20] The UK Government announced intent to introduce MUP in 2012,[21] but confirmed in July 2013 that they had reneged, with some observers suggesting evidence had been ignored due to alcohol industry influence.[22,23] Evidence suggests that the policy community in post-devolution Scotland is less accommodating to industry lobbying than its UK counterpart, having disrupted relationships between industry representatives and policymakers.[24,25] This may partially explain the differing fates of MUP in each government, although broader institutional and political factors may play their roles.[26] Analyses of evidence submitted to the Scottish Government's 2008 consultation into tackling the alcohol problem suggests that industry sources misrepresented evidence to strengthen their case against MUP,[27] and industry interests highlighted differing objectives for alcohol policy than non-industry actors.[28]

Literature about media coverage of alcohol largely focuses on advertising or entertainment content.[29] Those focusing on news largely analyse US[30] or Australian[31] sources. Nicholls[32] studied alcohol reporting in UK newspaper and television news, examining articles from two brief time periods, including images and advertisements.

We studied newspaper news coverage of MUP as a case study of how mass media public health policy debates develop. To our knowledge, this study is the first examining representations of a specific alcohol policy debate throughout an extended period, and the first quantitative analysis of UK newsprint coverage of MUP. We offer new insight by comprehensively analysing representations of MUP and alcohol-related issues in UK newspaper news articles. This research was conducted alongside two analyses of qualitative data from a sub-sample of articles. One focused on representations of, and contributions from, key advocates and critics of MUP,[33] while the other examined representations of the harms posed by alcohol to 'others'.[34]

Method

To understand UK national newspaper news coverage of MUP, we employed methods of sampling, data collection and analysis established in prior media content analysis studies.[35–38]

A sample of publications was selected purposively to be diverse in terms of regional perspective and readership profile, and each publication had high circulations (Table 1). Three Scottish national newspapers and seven UK national newspapers were selected, representing three genres: tabloid, middle-market tabloid and serious. This typology has been used in previous UK newspaper content analyses,[38–40] and ensured the sample largely represented the breadth of UK national newspaper coverage of the issue. Online editions were excluded.

Researchers searched the *Nexis UK* and *Newsbank* databases for articles containing variants of the terms 'alcohol' and 'pricing' published between 1 January 2005 and 30 June 2012. The period begins before Scottish Health Action on Alcohol Problems' (SHAAP) first endorsement of MUP, and ends following parliamentary passage of the Alcohol (Minimum pricing) (Scotland) Bill. In total, 2076 articles were retrieved, read and filtered. Of these, 1175 were excluded on the basis of meeting one or more criteria: article is from an Irish edition; article is from the TV guide, review, sports, travel, weather or readers' letters section; article duplicates a previously accepted article; and MUP is not the main focus. After filtering, 901 articles remained.

To record article content, researchers developed a coding frame. A basic structure was derived from the literature on alcohol and content analysis. Researchers read 100 randomly selected articles, adding emergent themes as thematic codes. Further batches of 20 articles were read until no new codes emerged. This method allows thematic codes to emerge from data organically without requiring pre-defined conceptual frames. The processes of familiarization with data and identifying a thematic framework from both *a priori* and emergent themes are similar to framework analysis.[41] However, as the textual data in the articles were coded numerically, the resulting analysis was quantitative.

Codes were grouped into categories in the coding frame. Table 2 lists the categories and codes used. Researchers (C.P., K.W.) recorded manifest content, noting when the article text contained overt statements falling within a thematic code. Manifest content is presented overtly, is quantifiable and facilitates analysis of broad trends in large samples, while latent content requires interpretive reading of underlying meanings, facilitating more nuanced qualitative analysis.[42]

The only code requiring latent coding was supportiveness of MUP, for which we developed a five-point scale comprising: supportive of MUP; mostly supportive of MUP; neutral/no stance taken on MUP; mostly against MUP; and against MUP. Rather than gauging the journalist's position, supportiveness reflects the frequency of arguments favouring and opposing MUP within each article, presented as either editorial

Table 1 Summary of publications and articles in sample

Title	Circulation[a]	Total articles		Front page articles		Word count		
		n	%	n	%	First quartile	Median	Third quartile
UK								
Serious								
Guardian & The Observer	2 781 000	42	4.7	0	0	424.0	545.5	715.0
Independent & Independent on Sunday	2 607 000	26	2.9	0	0	593.0	936.0	1176.0
Daily Telegraph & Sunday Telegraph	3 051 000	65	7.2	12	18.5	352.0	504.0	652.0
Middle-market								
Daily Mail & Mail on Sunday	9 521 000	35	3.9	2	5.7	413.0	593.0	763.0
Express & Sunday Express	2 683 000	101	11.2	1	1.0	227.0	347.0	481.0
Tabloid								
Mirror & Sunday Mirror	6 762 000	22	2.4	0	0	152.0	239.0	490.0
The Sun & News of the World	12 400 000[b]	126	14.0	2	1.6	124.0	195.0	377.0
Scotland								
Serious								
The Herald & The Sunday Herald	296 000	206	22.9	16	7.8	313.0	507.0	635.0
Scotsman & Scotland on Sunday	334 000	106	11.8	2	1.9	429.0	528.0	790.5
Tabloid								
Daily Record & Sunday Mail	1 503 000	172	19.1	18	10.5	154.0	243.5	399.0
Total		901	100	53	5.9	240.0	475.6	626.0

[a]Estimated weekly readership from the National Readership Survey, August 2013 (http://www.nrs.co.uk).

[b]Circulation figures for The Sun & The Sun on Sunday; The Sun on Sunday replaced the News of the World in February 2012.

or external perspectives. Articles exclusively containing either supportive or oppositional arguments were coded as 'supportive' or 'against', respectively. Articles predominantly, but not exclusively, containing positive arguments were coded as 'mostly supportive', while articles with the inverse distribution of arguments were coded as 'mostly against'. Articles containing no arguments, or equal proportions of supportive and unsupportive arguments, were coded as 'neutral/no stance taken'. Using this measure of supportiveness, even 'news' articles comprising relatively factual, non-opinionated reporting could be coded as supportive or unsupportive of MUP. Supportiveness was double-coded on a randomly selected 10% of articles. A linearly weighted kappa test of inter-rater agreement returned a coefficient of 0.87, which can be interpreted as 'almost perfect' agreement.[43]

Data were analysed using Stata v10.[44] Chi-squared tests were used to test how genre and format related to thematic codes. One-sample t-tests were used to test how each publication's mean support differed from both the overall sample mean and a neutral level of support. Linear regressions were used to investigate relationships between thematic codes and publication region, and relationships between characteristics of articles and their support for MUP. Where appropriate, regressions were adjusted by word count to account for the proportion of each article focusing on relevant content; longer articles are more likely to include content falling under our thematic categories due to their length, but a short article focused wholly on one aspect of the issue is no less important. Similarly, we adjusted tests of between-publication differences by genre to minimize its potential confounding effect.

Results

Overview of articles

Sample publications published 901 articles about MUP between 1 January 2005 and 30 June 2012. Fifty-two (6%) were on front pages, representing a large proportion of coverage; by comparison, 4.7% of articles in a study of reporting on H1N1 influenza were on front pages.[45] Table 1 details the number of articles, front page articles and the distribution of word counts by publication.

More than half of articles were published in the three Scottish publications (484, 53.7%). Per publication, Scottish newspapers reported on MUP much more than UK newspapers. Most articles were in serious genre publications (511, 56.7%), and most were news format (679, 75.4%).

Table 2 Reporting on the alcohol problem, affected groups, drivers and arguments

	Publication region							Publication genre							
	All articles (n = 901)		Scotland (n = 484)		UK (n = 417)		Regression P-value[a]	Tabloid (n = 254)		Middle market (n = 136)		Serious (n = 511)		Chi-squared P-value[b]
	n	%	n	%	n	%		n	%	n	%	n	%	
Reporting on the alcohol problem	674	74.8	339	70.0	335	80.3	<0.001***	173	68.1	109	80.1	392	76.7	0.011*
Mentions an alcohol problem within the UK	564	62.6	282	58.3	282	67.6	<0.001***	148	58.3	85	62.5	331	64.8	0.216
Mentions alcohol as a risk to personal health	365	40.5	175	36.2	190	45.6	0.001**[e]	83	32.7	65	47.8	217	42.5	0.006**
Mentions alcohol as a risk to others, society	335	37.2	169	34.9	166	39.8	0.076	80	31.5	57	41.9	198	38.7	0.069
Mentions alcohol as an economic problem	220	24.4	109	22.5	111	26.6	0.185	64	25.2	35	25.7	121	23.7	0.834
Mentions alcohol as a burden on the NHS	124	13.8	43	8.9	81	19.4	<0.001***	26	10.2	23	16.9	75	14.7	0.125
Mentions alcohol as a burden on the police	53	5.9	24	5.0	29	7.0	0.007**	11	4.3	5	3.7	37	7.2	0.135
Reporting on groups most affected by the alcohol problem	221	24.5	99	20.5	112	29.3	0.011*	54	21.3	45	33.1	122	23.9	0.002**
Mentions youths in relation to high-risk drinking	189	21.0	84	17.4	105	25.2	0.010*	45	17.7	38	27.9	106	20.7	0.060
Mentions women in relation to high-risk drinking	77	8.6	33	6.8	44	10.6	0.070	20	7.9	15	11.0	42	8.2	0.525
Mentions men in relation to high-risk drinking	55	6.1	25	5.2	30	7.2	0.062	15	5.9	7	5.1	33	6.5	0.841
Reporting on the drivers of the alcohol problem	686	76.1	356	73.6	330	79.1	0.055	183	72.0	111	81.6	392	76.7	0.096
Mentions cheap alcohol or 'problem drinks'	545	60.5	285	58.9	260	62.4	0.023*	137	53.9	81	59.6	327	64.0	0.027*
Mentions a negative drinking culture	359	39.8	184	38.0	175	42.0	0.789	101	39.8	64	47.1	194	38.0	0.157
Mentions supermarkets	259	28.8	119	24.6	140	33.6	0.001***	63	24.8	36	26.5	160	31.3	0.141
Mentions drinks promotions, happy hours etc.	259	28.8	136	28.1	123	29.5	0.287	64	25.2	39	28.7	156	30.5	0.308
Mentions alcohol advertising or marketing	91	10.1	38	7.9	53	12.7	0.002**	16	6.3	17	12.5	58	11.4	0.055
Framing arguments for and against MUP														
MUP is supported by experts/stakeholders	471	52.3	252	52.1	219	52.5	0.069	119	46.9	63	46.3	289	56.6	0.013**
MUP would be effective	413	45.8	227	46.9	186	44.6	0.339	117	46.1	47	34.6	249	48.7	0.013**
MUP is not supported by experts/stakeholders	367	40.7	217	44.8	150	36.0	0.741	72	28.3	45	33.1	250	48.9	0.001***
MUP would be ineffective	349	38.7	182	37.6	167	40.1	0.298	81	31.9	59	43.4	209	40.9	0.026*
MUP will punish responsible drinkers/the poor	288	32.0	128	26.5	160	38.4	<0.001	70	27.6	51	37.5	167	32.7	0.116
There is evidence to support MUP	257	28.5	135	27.9	122	29.3	0.012*	49	19.3	34	25.0	174	34.1	<0.001***
MUP is likely to face legal challenges	252	28.0	156	32.2	96	23.0	0.089	53	20.9	31	22.8	168	32.9	0.001**
MUP is good for public health and/or society	242	26.9	119	24.6	123	29.5	0.027*	56	22.0	40	29.4	146	28.6	0.122
MUP would be bad for business	194	21.5	136	28.1	58	13.9	<0.001	41	16.1	22	16.2	131	25.6	0.003**
There is no evidence to support MUP	174	19.3	99	20.5	75	18.0	0.331	43	16.9	28	20.6	103	20.2	0.522

Table 2 Continued

	Publication region							Publication genre						
	All articles (n = 901)		Scotland (n = 484)		UK (n = 417)		Regression P-value[a]	Tabloid (n = 254)		Middle market (n = 136)		Serious (n = 511)		Chi-squared P-value[b]
	n	%	n	%	n	%		n	%	n	%	n	%	
MUP will increase retailers' revenues	162	18.0	103	21.3	59	14.2	0.014*	48	18.9	18	13.2	96	18.8	0.294
MUP has public support	24	2.7	15	3.1	9	2.2	0.532	8	3.1	2	1.5	14	2.7	0.610
MUP does not have public support	17	1.9	4	0.8	13	3.1	0.065	3	1.2	6	4.4	8	1.6	0.059

[a]Linear regression of the relationship between publication region and mentioning a given theme, controlling for genre.
[b]The Chi-squared test of whether proportions differed between genres.
*P < 0.05.
**P < 0.01.
***P < 0.001.

Trends in reporting over time

Four articles related to pricing control interventions, but not MUP, were published between 2005 and 2007. Reporting about MUP began in 2008. Frequency of reporting increased month-to-month between January 2008 and June 2012, and varied with news events (Fig. 1).

The Scottish Government's policy dominated reporting prior to December 2011. Reporting on the UK Government's policy peaked at 36 articles in March 2012 when the UK Government's alcohol strategy was published,[46] and fell to six by June 2012.

Reporting on the alcohol problem

Three-quarters of articles ($n = 674$) overtly mentioned the alcohol problem (see Table 2 for problem definitions and frequencies). When adjusted for word count, middle-market publications were significantly more likely to mention any problem definition and alcohol as a health risk. News format articles were significantly less likely to mention: any alcohol problem; a problem within the UK; a health risk; or a risk to society.

Reporting on groups affected by the alcohol problem

Youths ('children', 'adolescents' etc.) were mentioned more than women and men (Table 2). Articles in Scottish publications were significantly less likely to mention specific groups in general, and youths in particular. Similar relationships existed when adjusting for genre. Middle-market publications mentioned youths significantly more frequently. Serious publications were significantly less likely to mention youths when adjusting for word count, and significantly less likely to mention women. Format was significantly related to mentioning youths, women and men; each was mentioned in commentary or feature articles more than news articles.

Reporting on drivers of the alcohol problem

The most frequently mentioned drivers were cheap alcohol (545, 60.5%), drinking culture (359, 39.8%) and supermarkets (259, 28.8%) (Table 2). Format had significant, positive relationships with mentioning drinking culture and advertising. Culture was mentioned in commentary and feature articles more commonly than news articles. Advertising was mentioned more commonly in commentary articles.

Article support for MUP

Articles were approximately neutral towards MUP (mean supportiveness 51.4%), with little difference between regions. Middle-market publications were significantly less supportive
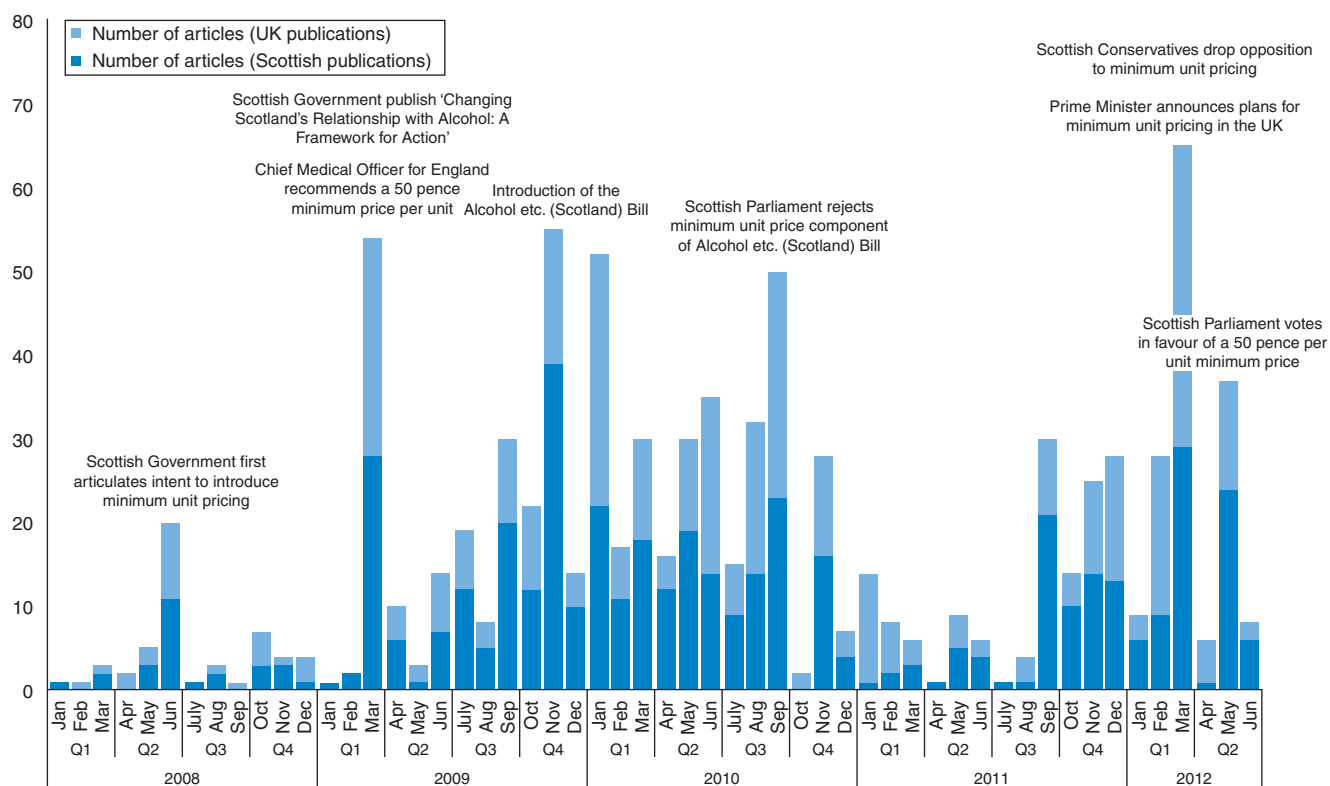
Fig. 1 Frequency of articles reporting on MUP by month.

than other genres, and commentary articles significantly less supportive than other formats (Table 3).

A linear regression indicated that supportiveness increased significantly by an average of 0.2% per month across the sample period ($P = 0.017$). In Scottish publications, the increase was 0.4% per month ($P = 0.001$). UK publications exhibited no significant increase. The greatest change within a publication was in the *Scotsman*, with a significant monthly increase of 0.5% ($P = 0.005$). Supportiveness was positively and significantly related to mentioning: any description of the alcohol problem; alcohol as a health risk; alcohol as a risk to society; any driver of the alcohol problem; cheap alcohol; supermarkets; women; and men.

Framing arguments for and against MUP

Table 2 lists arguments for and against MUP. Arguments involving efficacy, expert support and evidence were most frequent. Few articles mentioned public support (24, 2.7%), or lack of support (17, 1.9%). Controlling for genre, Scottish publications referred to MUP harming business and increasing retailer's revenue significantly more than UK publications, and referred to MUP punishing responsible drinkers or the poor, being supported by evidence or being good for public health significantly less.

Table 3 Article support for MUP by publication region, genre and format

	n	Mean support for MUP	T-test (difference from sample mean)	T-test (difference from 50%)
Publication region				
Scotland	484	51.9%	$P = 0.774$	$P = 0.228$
UK	417	50.9%	$P = 0.760$	$P = 0.591$
Publication genre				
Tabloid	254	53.0%	$P = 0.498$	$P = 0.193$
Middle-market	136	42.3%	$P = 0.003$**	$P = 0.012$*
Serious	511	53.1%	$P = 0.244$	$P = 0.032$*
Publication format				
Commentary	152	43.9%	$P = 0.028$*	$P = 0.074$
News	679	52.3%	$P = 0.473$	$P = 0.059$
Feature	70	59.3%	$P = 0.083$	$P = 0.041$*

*$P < 0.05$.
**$P < 0.01$.
***$P < 0.001$.

Commentary articles were significantly less likely to characterize MUP as: supported by experts or stakeholders; effective; lacking support from experts or stakeholders; or good for

public health. News format articles were significantly more likely to characterize MUP as: likely to face legal challenges; good for public health; and bad for business, and significantly less likely to report that MUP would be ineffective. Feature articles were most likely to mention that MUP would be effective and is supported by evidence.

Stakeholder opinions

Quotations and other references to stakeholders, along with their reported stance towards MUP, are reported in Supplementary Table S1. Politicians were cited most frequently (735, 81.6%), particularly SNP (633, 70.6%), followed by health charities and the NHS (334, 37.1%), and alcohol producers (306, 34.0%). The most frequently referenced supermarket spokesperson was cited 27 (3%) times. Health charities and the NHS were overwhelmingly presented as supportive of MUP, while drinks industry representatives were predominantly opposed.

Discussion

Main findings of this study

This study describes UK and Scottish newsprint representations of the MUP policy debate, which had a high profile in both, particularly Scottish. Coverage increased over time, mirroring the progress of the wider debate. Most articles discussed the alcohol problem, predominantly characterizing it in terms of health and social order, often associated with children or youths, and driven by cheap alcohol and drinking culture. Articles were, on aggregate, neutral towards MUP. Support increased over time, mirroring a policy landscape wherein the Scottish Conservative Party and Scottish Liberal Democrats reversed their opposition and the UK Government resolved to introduce MUP. Frequently cited stakeholders included politicians, health charities and industry representatives. Health charities and the NHS were presented as overwhelmingly supportive, and drinks industry stakeholders as almost as uniformly opposed, highlighting division between, and consistency within, these groups. The most frequent arguments concerned efficacy and the support of experts and evidence, as well as perceived injustice towards poor and responsible consumers. Public support and effects on businesses were discussed relatively infrequently.

What is already known on this topic

Media representations of tobacco policy debates have been studied extensively,[35,47,48] but little research explores representations of alcohol policies. Some research examines relationships between media and alcohol problems,[30,31,49,50] but not specific policies. Audience reception research suggested that news consumers may be sceptical about the ability of policy to influence culture, and that they may not readily perceive interventions such as MUP as part of a broad package of policies.[18]

Our findings support those of Nicholls,[32] who identified politicians, health charities and the alcohol industry as the most cited stakeholders in the MUP debate, and found that articles associated cheap alcohol and supermarkets with excessive consumption. Our findings are complemented by our qualitative analyses of newspapers representations of: the key claim-makers in the debate[33]; and the harms caused to 'others' by alcohol.[34] The former examines differences and similarities between opponents and supporters of MUP within the media debate, offering suggestions of how evidence-based public health policy might be better advocated in the media,[33] while the latter examines representations of the social harms that alcohol may cause, drawing conclusions about how those representations might influence public acceptance of population-based solutions.[34]

What this study adds

Advocates will welcome MUP's high profile and some characteristics of the coverage. Articles problematize alcohol primarily in terms of health and social order, characterizations that have been prioritized by the Scottish and UK governments.[7,8] Associations between the different national debates and different characterizations were not evident, but articles mentioning health risks tended to be more supportive than those mentioning social disorder.

The association of children and youths with alcohol problems could have implications for the framing of solutions, as constructions of affected societal groups can influence appraisals of solutions.[28,51,52] Associating children, a powerless but positively constructed social group, with the alcohol problem could stimulate support for legislative solutions. Conversely, some categories of 'young people' may be viewed as 'deviants'[51] engaged in individual-level misbehaviour to which top-down solutions might seem ill-suited. Audience reception research might investigate how associations of alcohol problems with children influence perceptions of solutions.

Presentations of problem drivers can influence appraisals of solutions,[28,52] so it is appropriate to consider the potential implications of how drivers of the alcohol problem were depicted. Frequent reporting of cheap drinks, supermarkets and promotions may contribute to a structural causal frame suited to structural solutions. Cultural drivers are more complex; while readers may believe legislative change can mediate culture, culture is often perceived as slow-changing

and resistant to discrete legislative solutions. Australian evidence suggests news audiences view 'drinking culture' as a more powerful driver than price, and doubted legislation's ability to influence culture.[18] We found no relationship between mentioning drinking culture and support for MUP. Audience reception research could improve understandings of associations between perceptions of drivers and attitudes towards solutions.

We found that articles were neutral towards MUP overall, and supportiveness increased over time. Increased media support may be mirrored by increased public support through gradually increasing familiarity with MUP, as was the case with smoke-free legislation.[11] The predominance of arguments related to efficacy, evidence and expert support was consistent with the evidence-based policy, suggesting the media debate largely focused on health impacts instead of emotive perspectives or business interesting, and that industry interests did not take precedence over health charities. A debate focused on efficacy, evidence and experts echoes calls for evidence-based policymaking, but is not necessarily evidence of a substantive shift in favour of evidence-based policy.

News format articles were more supportive than commentary, feature or editorial articles. This difference may hold lessons for advocates; public health advocates might benefit from better representation in non-news formats, perhaps by engaging a broader range of journalists beyond health writers, or seeking more opportunities to write as guest contributors.

In addition to our concurrent qualitative analyses,[33,34] our research could benefit from further investigation. Further research could focus on societal groups associated with the alcohol problem, determining how different sub-groups of 'young people' are constructed, comparing constructions of men and women or analysing constructions of different categories of 'problem' drinkers. Further content analyses might also examine media beyond newsprint.

Limitations of this study

Quantitative content analysis allows overviews of manifest content of large samples, but is not suited to investigating specific elements of frames in depth or analysing context in detail, and cannot determine authors' intentions or audiences' interpretations.[53] In this research, scope for comparative analysis of representations of the UK and Scottish debates was limited as few articles discussed the UK Government's proposed policy. Additionally, it should be noted that comparisons of UK and Scottish newspapers are not straightforward comparisons between two discrete regions' exclusive publications, rather UK publications are written partly for Scottish

readers, and also publish Scottish editions containing articles tailored for that audience. More generally, the focus on newspapers precludes investigation of representations within other media, which are increasingly relevant as newspaper circulation declines.[54] Methodologically, this research would be more robust if every article were double-coded; double-coding the latent content of a random 10% sub-sample indicated high agreement, but comprehensive double-coding would have been optimal.

> **Key points**
>
> - MUP has been a high-profile issue in UK and Scottish newspapers
> - Arguments about MUP policy tended to focus on what works to improve health outcomes, rather than focusing on emotive perspectives or the interests of business
> - The alcohol problem was presented as driven by cheap alcohol and a negative drinking culture
> - Appraisals of the intervention were neutral overall, but supportiveness increased over time
> - Presentations of the problem and its drivers may contribute to a structural causal frame, depicting the problem as one suited to structural, legislative solutions

Supplementary data

Supplementary data are available at the *Journal of Public Health* online.

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Conflict of interest

S.H. and S.V.K. are investigators planning an evaluation of MUP. Several years ago, S.V.K. received payment for writing

opinion articles for the Scotsman newspaper, but has never written about the topic of alcohol in the mass media. The authors declare they have no other conflict of interest.

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Theme II: Policy debates

Paper V

WOOD, K., **PATTERSON, C.**, KATIKIREDDI, S. V. & HILTON, S. 2014. Harms to 'others' from alcohol consumption in the minimum unit pricing policy debate: a qualitative content analysis of UK newspapers (2005–12). *Addiction,* 109**,** 578-584.

Harms to 'others' from alcohol consumption in the minimum unit pricing policy debate: a qualitative content analysis of UK newspapers (2005–12)

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ABSTRACT

Background and aims Minimum unit pricing is a fiscal intervention intended to tackle the social and health harms from alcohol to individual drinkers and wider society. This paper presents the first large-scale qualitative examination of how newsprint media framed the debate around the harms of alcohol consumption to 'others' during the development and passing of minimum unit pricing legislation in Scotland. **Methods** Qualitative content analysis was conducted on seven UK and three Scottish national newspapers between 1 January 2005 and 30 June 2012. Relevant articles were identified using the electronic databases *Nexis UK* and *Newsbank*. A total of 403 articles focused on the harms of alcohol consumption to 'others' and were eligible for detailed coding and analysis. **Results** Alcohol harms to wider society and communities were identified as being a worsening issue increasingly affecting everyone through shared economic costs, social disorder, crime and violence. The availability of cheap alcohol was blamed, alongside a minority of 'problem' youth binge drinkers. The harm caused to families was less widely reported. **Conclusions** If news reporting encourages the public to perceive the harms caused by alcohol to wider society as having reached crisis point, a population-based intervention may be deemed necessary and acceptable. However, the current focus in news reports on youth binge drinkers may be masking the wider issue of overconsumption across the broader population.

Keywords Alcohol, alcohol policy, content analysis, harms to others, media, qualitative research.

INTRODUCTION

On 24 May 2012, the Scottish Government passed legislation introducing minimum unit pricing (MUP) of alcohol (at a level of 50 pence per unit) as a targeted means of reducing the cheapest beverages thought to be responsible for causing most harm. Excessive alcohol consumption is associated with a multitude of health problems for the drinker, including increased risk of liver disease, heart disease, teenage pregnancy, sexually transmitted infections and accidental injuries [1–5].

Health problems affecting individual drinkers constitute only one dimension of the detrimental impacts of harmful drinking. A broad range of harms arising from alcohol misuse can impact upon others at a societal, community and family level. Broader societal impacts can operate through a number of mechanisms, including reduced economic activity and increased economic costs arising from health-care, policing and prison provision [1,6]. Communities can be particularly adversely affected by problems associated with intoxication, violence, hooliganism and drink-driving [7–9]. At the family level, problematic alcohol consumption is associated with domestic abuse, financial difficulties and poor parenting [7,10,11]. This wide range of broader harms has resulted in alcohol being deemed the most harmful substance in the United Kingdom [12]. Concern about alcohol-related harm is not new. The 'gin craze' of the mid-18th century created what Nicholls [13] described as 'the first modern moral panic' (p. 128), while legislation on gin production and the temperance movement highlight steps towards controlling alcohol consumption. More recently, 'lager louts' in the 1980s and 'binge drinking' and 'ladettes' in the 1990s and 2000s have been prominent in policy and media debates [14,15]. It is perhaps unsurprising, therefore, that MUP—the newest attempt to tackle the

perceived alcohol problem—has attracted widespread media coverage.

Media coverage is known to not only influence public acceptability in the lead-up to new public health interventions [16,17], but also to shape legislative priorities in the first place [18–21]. The media play a key role in setting the public health news agenda, shaping public perceptions by choosing what news to report and how to report it [22]. The media's influence in shaping public understandings, beliefs and behaviours on issues has encouraged its use as a tool to provide health information to the population [20]. The media therefore inform the public about health issues and threats—acting as a link between them, policymakers and politicians [20,23], either educating about alcohol or normalizing over-drinking. In this respect, Nicholls [24] suggests that the media play a role 'in articulating shared cultural values around alcohol' (p. 200). However, selective exposure theory suggests that people choose media sources reflecting their point of view, therefore limiting the effect of the media on audience opinion. Slater [25] suggests a 'reinforcing spirals' approach in which 'media selectivity and media effects form a reciprocal mutually influencing process' (p. 283)—individuals choose media reflecting their opinions which consequently reinforce them; they then continue to select media confirming these ideas [26].

Studies examining the mass media representations of alcohol have tended to focus on alcohol advertising and television programmes and their potential impact upon public consumption [27]. Hansen & Gunter [27] identified 'a gap in the literature on media and alcohol consumption that specifically focuses on the role that news coverage can play' (p. 154). Furthermore, Laslett *et al.* [7] suggest there has been a general neglect of research into harms to others and alcohol.

Here we present the first in-depth analysis of how the harms of alcohol are presented in UK newspapers within the context of the development and passing of MUP legislation by the Scottish Parliament. At the time of writing, MUP faces a legal challenge (instigated by the Scotch Whisky Association) and its implementation has been delayed [28]. We anticipate that this study will provide valuable insights into the media's role in shaping the policy debate around the harms to 'others' of alcohol consumption, and in supporting the efforts of policy advocates seeking to engage with the media.

METHOD

We selected seven UK and three Scottish national newspapers (including their Sunday counterparts) with high circulation figures, and a range of readership profiles representing three genres: serious, mid-market tabloids and

Table 1 Summary of articles (*n* = 403).

| Genre | Title | Total articles | |
		n	*%*
Serious	*Guardian* and *Observer*	27	6.7
	Daily Telegraph and *Sunday Telegraph*	24	5.9
	Independent and *Independent on Sunday*	11	2.7
	Herald and *Sunday Herald*	94	23.3
	Scotsman and *Scotland on Sunday*	80	19.9
Subtotal		236	58.6
Tabloid	*Mirror* and *Sunday Mirror*	10	2.5
	Sun and *News of the World*	51	12.7
Subtotal		61	15.1
Mid-market	*Daily Mail* and *Mail on Sunday*	20	4.9
	Express and *Sunday Express*	44	10.9
	Daily Record and *Sunday Mail*	42	10.4
Subtotal		106	26.3
Total		403	100

tabloids. This typology has been used in other print media analyses to select a broad sample of newspapers with various readership profiles [17,29]. See Table 1 for the newspapers included in this study.

Our search period was from 1 January 2005 to 30 June 2012. We selected this time-frame to encompass a period beginning 2 years before MUP was first proposed in Scotland, and ending following the passing of the legislation by the Scottish Parliament in June 2012. Relevant articles were identified using the electronic databases *Nexis UK* and *Newsbank*, adopting the search terms 'alcohol' and/or 'pricing'. This search identified 1649 articles, which were exported, printed and scrutinized (C.P., K.W.) to establish whether or not it made reference to the rationale for MUP as a means to stem the alcohol problem. After excluding duplicate articles and letters 901 articles were eligible for coding, of which 403 articles discussing the Scottish Government's MUP policy were included in this analysis as a key focus of the article was the harms of alcohol consumption to 'others'.

To develop a coding frame, a random selection of 100 articles were read to identify key themes around alcohol and create thematic categories in the initial coding frame. Using the principles of grounded theory, further batches of 20 articles were read and coded until no new categories emerged. At this point we assessed we had reached 'saturation', having identified all relevant thematic categories [30]. Coding of articles was conducted over a 10-week period by three coders (K.W., S.H., C.P.) working together in close collaboration, with the first coder (K.W.) checking and validating each others' coding. Clarke & Everest [31] suggest that latent qualitative content includes the investigation of deeper and perhaps unin-

tended themes, requiring more in-depth interpretive analytical qualities of qualitative methods to make inferences from data. All text was re-read and re-coded to discover patterns and anomalous ideas. Written summaries of thematic categories and the constant comparative method [30,32] informed the interpretation of the data across the articles to consider what the key messages were and how they were framed.

FINDINGS

Between 2005 and 2012 403 news articles were published in these 10 newspapers, with a key focus on the harms to 'others' of alcohol consumption. Of these articles, 58.56% ($n = 236$) were published in 'serious' newspapers, 15.14% ($n = 61$) in 'mid-market' and 26.3% ($n = 106$) in 'tabloid' newspapers (see Table 1). It is perhaps not unexpected that more than half of the articles were published by 'serious' newspapers, as this category includes the *Scotsman* and the *Herald*—both Scottish national newspapers and therefore more likely to report on a Scottish policy debate.

Scale of harms

A dominant theme to emerge was that the scale of harms from alcohol to people other than the drinker had reached such magnitude that urgent action was required (see Fig. 1). Articles cited evidence of spiralling economic costs, growing alcohol-related crime and violence and domestic breakdown to illustrate the extent to which alcohol consumption causes harm across society. This framing of harms to 'others' as reaching a 'crisis' (Editorial journalist, *Independent on Sunday*, 24 January 2010) 'we can't afford to do nothing about' (Academic, *Sun*, 26 September 2011) served as a justification for considering the new policy action. Few articles disputed the scale of the problem.

Who is harming who?

Across newspapers, alcohol consumption was widely reported as permeating every level of society, harming everybody directly or indirectly (see Fig. 2), and described as a 'blight' on society (Politician, *Express*, 6 June 2011). There was some divergence in whose alcohol consumption was reported to be harming 'others'. Many articles referred to an 'irresponsible minority' (Politician, *Guardian*, 15 February 2012) of drinkers and also singled out young binge drinkers. Such groups were reported as becoming increasingly irresponsible in their drinking behaviours and blamed for a range of both intentional and unintentional harms to 'others' through their 'alcohol-fuelled' anti-social behaviour. Articles repeatedly mentioned 'out-of-control' 'gangs of youths' and described images of '. . . city centre streets . . . full of brawling, shouting, puking youngsters . . .' (Editorial Journalist, *Sunday Mirror*, 25 March 2012). A second group widely identified across the newspapers were dependent drinkers who were frequently described as 'reckless'. Both these groups were presented as the 'visible' or 'problem' 'minority' largely responsible for

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'Alcohol permeates so many elements of our society and we have to take whatever measures we can to tackle it.' (Politician, *The Herald*, 6 October 2009)

'Few would disagree with the need to crack down on the binge-drinking culture, the drink-fuelled yob behaviour that is a blight on the nation.' (Editorial Journalist, *The Scotsman*, 6 November 2009)

'The price difference is symbolic of a culture that has allowed drinking to spiral out of control, threatening our health and social cohesion.' (Health Advocate, *Daily Mail*, 19 January 2011)

'...the scale of the problem ... has become urgent and very visible.' (Journalist, *The Guardian*, 23 March 2012)

'Scotland's dangerous relationship with alcohol presents a huge challenge, not only for individuals' own health and wellbeing but also for society.' (Politician, *The Sun*, 12 March 2012)

Figure 1 Scale of harm

'It's now widely recognised that excessive alcohol consumption across society, fanned by rock-bottom pricing, is one of the biggest threats to Scottish public health.' (Politician, *Sunday Herald*, 27 September 2009)

'Anyone who observes appalling drink-fuelled behaviour in our towns and cities late at night knows that the problem crosses all sections of society.' (Editorial, *Daily Record*, 23 November 2009)

'I remain concerned, however, that excessive drinking leading to anti-social behaviour by a visible minority who are able to buy cheap alcohol at pocket-money prices will undermine any efforts to create a more cohesive society.' (Alcohol Industry Figure, *The Daily Telegraph*, 8 December 2010)

'That's money we have to spend because of the reckless behaviour of an irresponsible minority.' (Politician, *Daily Mail*, 15 February 2012)

Figure 2 Who is harming who?

causing harms to the 'sensible' 'responsible' 'majority'. There was a tendency to characterize 'high-strength, low-cost alcohol' (Government Spokesperson, *Daily Telegraph*, 30 June 2008) and 'cut-price booze' (Journalist, *Mirror*, 10 November 2008) as fuelling harms to 'others'. A less common (but nevertheless observed) theme was in relation to harmful alcohol consumption at the population level. It is of interest that while some articles referred to overconsumption across the population, direct reference to groups causing harm to 'others', with the exception of those mentioned above, was largely absent. One article referred to 'middle class drinkers who binge on alcohol at home' being 'just as responsible as drunken youths roaming the streets' (Religious Leader, *Mirror*, 15 June 2009). Another stated that 'behind closed doors, the prosperous and impecunious alike are drinking too much', costing Scotland in 'house fires and accidents in the home as well as lost working days, disease and premature death' (Features Journalist, *Herald*, 27 November 2009).

The economic harms to society

Economic harms of alcohol consumption were widely reported and often described as 'spiralling' costs. The *Observer* reported: 'We have a problem that's costing at least £2.25bn a year, flooding our health service, undermining our economy and filling up our jails' (Politician, *Observer*, 7 September 2008), while the *Express* stated: 'We cannot ignore that alcohol misuse is costing £3.56 billion a year—£900 for every adult in Scotland' (Government Spokeswoman, *Express*, 21 August 2010). Articles often used phrases such as 'costing us', 'expense to

the taxpayer' and 'we are all paying' to generate a sense of shared harms. For example, the *Independent* stated: 'Unlike those individual tragedies, all of us pay for the billions squandered on the National Health Service (NHS) and police costs of dealing with alcohol abuse' (Editorial Journalist, *Independent*, 3 July 2010), while readers of the *Sun* were told: '. . . it's costing us the taxpayers' (Alcohol Control Advocate, *Sun*, 7 May 2008). Articles frequently specifically mentioned the growing cost to the NHS and Criminal Justice System. Another reported harm was to the country's economic productivity and potential through days lost from work. However, there was some dissent from the drinks industries, who were not convinced of the economic costs (Sunday Herald, 15 March 2009). Another article questioned the accuracy of the various figures presented, suggesting they had been '. . . plucked out of the air' (Features Journalist, *Herald*, 16 August 2010).

Harm from social disorder, crime and violence

Antisocial behaviour and connections between alcohol and violent crime were featured consistently across newspapers. An increase in alcohol-related crime and violence was widely reported, with cheap alcohol often cited as 'fuelling crime' and 'blighting our communities' (Politician, *Sun*, 5 March 2009). Articles also referred to a rise in drunken victims of crime, reporting that alcohol not only fuels people to commit crime, but also makes people more vulnerable to becoming victims. Statistics, police reports and research evidence were used to back up these claims; for example: 'In 2008, nearly half of Scottish prison inmates admitted being drunk when they

offended' (Journalist, *Guardian*, 11 November 2010), or reporting: '67% of murderers were drunk at time of killing, 450 rapes directly attributed to alcohol in 2006, 40% of jail inmates drunk when they committed offence, and 31 000 attacks last year were linked to alcohol' (Journalist, *Sun*, 5 March 2009). In addition to criminal incidents, news articles reported on the threat of violence and subsequent fear of crime, illustrated through discussion of 'no-go' areas (Journalist, *Sunday Express*, 3 April 2005) where people were 'too scared to go' (Journalist, *Daily Telegraph* 20 January 2010). Such areas were described as 'battle grounds' (Editorial Journalists, *Sun*, 3 September 2010) and places that 'you avoid at all costs' (Editorial Journalist, *Independent on Sunday*, 24 January 2010). The role of alcohol in fuelling violence and crime, causing harm to others, was not disputed in any of the articles.

Harm to families: home drinking and family breakdown

Another key theme in reporting was the shift away from drinking in pubs and clubs towards greater drinking in the home, attributed to the availability of cheaper supermarket alcohol. This shift in drinking patterns was reported to parallel an increase in violence occurring within homes, with the *Scotland on Sunday* reporting that '[t]his backs up claims by police chiefs who have warned that anti-social drinking is now more prevalent in the home rather than in pubs' (Journalist, 17 January 2010). A key proponent of this argument in newspapers was Stephen House—then Chief Constable of Strathclyde Police—who talked about a 'market-driven' change in violence, warning of '. . . an increase in "private-space violence", with fights that previously would have taken place on the street or inside licensed premises now moving into households' (*Herald*, 6 October 2009). While violence occurring in the home was mentioned in many articles, domestic violence within families was not typically discussed in any detail. It tended to be mentioned in lists as one of a number of other problems related to alcohol consumption.

Family breakdown and harm caused to family members by alcohol abuse were also reported, with alcohol said to be 'wrecking families' (Editorial, *Daily Record*, 7 March 2011) and contributing to financial hardship when money is spent maintaining an alcohol addiction at the expense of the family's wellbeing:

> Just about every extended family has a problem drinker. And they say every alcoholic takes five people down with them. They cause heartache to their spouse, their parents, their siblings and (if they still have one) their employer. Then there are their children . . . (Features Writer, *Herald*, 2 November 2010).

The particular impact of alcohol abuse on children also featured in some articles. Living with a parent who drank excessively was reported to have a negative impact on children—physical abuse, neglect and emotional stresses were reported as regular experiences. The scale of the problem was often highlighted, for example: 'More than 2.6 m children in the UK now live with a parent who drinks at hazardous levels' (Journalist, *Independent on Sunday*, 18 December 2011). This harm to children also extended to some reports in articles of harm caused to unborn babies by mothers drinking during pregnancy.

DISCUSSION

Unsurprisingly, there has been huge media interest in reporting on the development of the Alcohol (Minimum Pricing) Bill. Our analysis of UK newspaper coverage shows that harms to 'others' are being presented to the public as a growing and unaffordable problem that must be tackled. Newspapers portrayed the increased availability of cheap alcohol as fuelling irresponsible consumption, leading to widespread harms. This reflects the long-established evidence base for reductions in alcohol price being associated with increased alcohol consumption and alcohol-related harms [33,34]. Such framing may have moved the harms to 'others' from alcohol consumption 'from the realm of fate to the realm of human agency' ([35] p. 283). A commonly reported reason for the worsening situation was the shift from drinking alcohol in licensed premises towards increased consumption in domestic settings, mirroring research by the Institute of Alcohol Studies [36] and Foster & Ferguson [37].

A prominent theme to emerge was the connection between alcohol, violence and crime, which was further linked to antisocial behaviour, and public perceptions of fear in communities and cities. However, Anderson & Baumberg [1] report that fear of drunk people in public places is less common than other less severe consequences of alcohol consumption, such as being kept awake at night. This analysis shows agreement with Nicholls' [24] content analysis of television and newspaper coverage of alcohol. Both studies highlight the prominence of violence, crime and antisocial behaviour and demonstrate that they have become dominant themes in alcohol-related news reporting. It is of interest that harms to others within the family tended to play a less prominent role in articles, potentially reflecting their perceived lower salience to the general public (by either journalists, advocates or both). This may also reflect an emphasis on the more easily calculable economic, NHS and criminal impact of alcohol's harms and difficulties in calculating the impacts of alcohol abuse on a family [38].

It is noteworthy that industry figures were largely absent in the framing of the harms to 'others' of alcohol,

perhaps indicating their focus on discrediting the policy of MUP rather than the components of the alcohol problem. Hilton *et al.* [39] provides a more detailed examination of key-claim makers and their arguments in the MUP debate.

While many articles referred to harms arising from population consumption levels, the continued concentration on specific risk groups and a minority of problem drinkers highlights a potential difficulty for those advocating for public health interventions. The concern around the drinking behaviours of young people may reflect evidence that the harms to others from their consumption have become more apparent. In addition, young people are particularly prone to experience harms from others' consumption [40]. However, focusing on these harms may reinforce an emphasis on acute intoxication, down-playing the considerable burden imposed as a result of chronic consumption across the broader population. Arguably, therefore, there is a tension apparent between these presentations. On one hand, emphasizing the behaviours of specific subgroups (typically young binge drinkers) allows a clear portrayal of overt and immediate harms to society. On the other hand, Geoffrey Rose suggested that when the risk of a health harm is broadly distributed across a population, interventions to influence the overall distribution of risk may be more effective than targeting individuals at greatest risk [41]. In other words, changes in population determinants of consumption (increasing alcohol price or reducing availability) may produce greater gains than targeting drinkers at highest risk. Therefore, if the public were to view alcohol harms as arising from overconsumption across the population, population-based measures (such as MUP) may be accepted more readily and the overall benefits better appreciated.

Some limitations of this research should be noted. First, as our findings are based on newspapers, the results cannot be generalized to other types of media. It would be useful for future studies to examine other media sources. Secondly, the study did not explore audience reception, and it is therefore impossible to determine how the messages presented may have been interpreted by readers. However, the study does have a number of strengths. This is the first qualitative examination of UK newspaper representations of the MUP policy and these findings may provide timely insights about the framing of messages ahead of its implementation. Conducting latent qualitative analysis was also a strength, as it allowed more in-depth investigation of data on 'harms' than if manifest quantitative analysis had been used alone; a paper describing trends in media coverage and the arguments presented for and against the policy, is reported elsewhere (Patterson, under review).

This media analysis of newsprint coverage during the debate on MUP in the United Kingdom shows how the case for the policy has been framed to the public. Such framing is known to influence public awareness, attitudes and behaviours, which may promote public support for policy action on alcohol and provides a case study of how the media can play a role in the development of innovative alcohol policy. In addition, this research illustrates the potential for the media to influence and increase public support for a policy by reporting on harms to 'others'. This may, in turn, assist in achieving widespread public acceptance following the implementation of a policy, as occurred with the positive media coverage preceding the introduction of smoke-free legislation [16]. Indeed, Kitzinger [42] notes that the level of media attention relates to the prominence of issues with the public and policy makers—their interest in an issue may fluctuate in response to an increase or fall in media coverage. Thus, the more news coverage an issue receives, the more important the issue may become. Giesbrecht *et al.* [43] argue that by increasing the profile of alcohol through the frame of 'the second-hand effects of drinking' it will be easier to develop policy responses which take account of the 'substantial burden of illness and other harms from alcohol use' (p. 1324–25). Babor [33] also highlights the importance of terminology, suggesting that 'alcohol-related collateral damage brings home the realization that in many communities, homes and families, the drinking environment has become a combat zone' (p. 1613). Our study illustrates how news reporting can encourage greater debates about the nature of harms to 'others' which may help to increase public support for effective targeted population health measures. However, a continued focus upon particular 'risk groups' may overshadow the wider issue of overconsumption across society and consequently the need for population health measures. Therefore, attempts to redress the balance in future communications may be a useful contribution to the public debate on MUP and other alcohol policies.

Declaration of interests

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Theme II: Policy debates

Paper VI

PATTERSON, C., SEMPLE, S., WOOD, K., DUFFY, S. & HILTON, S. 2015. A quantitative content analysis of UK newsprint coverage of proposed legislation to prohibit smoking in private vehicles carrying children. *BMC Public Health,* 15**,** 760.

RESEARCH ARTICLE   **Open Access**

CrossMark

A quantitative content analysis of UK newsprint coverage of proposed legislation to prohibit smoking in private vehicles carrying children

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Abstract

Background: Mass media representations of health issues influence public perceptions of those issues. Despite legislation prohibiting smoking in public spaces, second-hand smoke (SHS) remains a health risk in the United Kingdom (UK). Further legislation might further limit children's exposure to SHS by prohibiting smoking in private vehicles carrying children. This research was designed to determine how UK national newspapers represented the debate around proposed legislation to prohibit smoking in private vehicles carrying children.

Methods: Quantitative analysis of the manifest content of 422 articles about children and SHS published in UK and Scottish newspapers between 1st January 2003 and 16th February 2014. Researchers developed a coding frame incorporating emergent themes from the data. Each article was double-coded.

Results: The frequency of relevant articles rose and fell in line with policy debate events. Children were frequently characterised as victims of SHS, and SHS was associated with various health risks. Articles discussing legislation targeting SHS in private vehicles carrying children presented supportive arguments significantly more frequently than unsupportive arguments.

Conclusions: The relatively positive representation of legislation prohibiting smoking in vehicles carrying children is favourable to policy advocates, and potentially indicative of likely public acceptance of legislation. Our findings support two lessons that public health advocates may consider: the utility of presenting children as a vulnerable target population, and the possibility of late surges in critical arguments preceding policy events.

Background

In 2011, the British Medical Association called for all private vehicles to be added to existing bans on smoking in enclosed public spaces throughout the UK [1], highlighting the restrictive interior spaces in vehicles, the specific vulnerabilities to second-hand smoke of children and elderly people, and children's lack of agency to refuse to share a vehicle with smokers [1]. The risks of second hand smoke (SHS) are increasingly well understood [2, 3], and SHS is estimated to account for more than 600,000 [4] of the six million tobacco-related deaths worldwide each year [5]. Bans on smoking in enclosed public spaces throughout the United Kingdom

(UK) predominantly restrict non-smokers' exposure to SHS to private homes and vehicles, and the private vehicle has been identified as potential focus of future legislation designed to further limit non-smokers' exposure to SHS.

In 2014, members of the UK Parliament voted to add an amendment to the Children and Families Bill empowering the Government to introduce legislation prohibiting smoking in vehicles carrying children, and bans are expected to come into force in England and Wales in October 2015 [6, 7]. The Smoking (Children in Vehicles) (Scotland) Bill, which would prohibit smoking in vehicles carrying children, was introduced to the Scottish Parliament in December 2014 and, at the time of publishing, is under scrutiny of the Health and Sport Committee [8].

When conceiving and promoting public health policy, policymakers must take into account the interests and

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attitudes of the public to ensure that policies are appropriate and acceptable. Mass media are a key influence on the public's awareness and understandings of issues. In their theory of agenda setting, McCombs and Shaw [9] describe how the mass media set the political agenda, influencing which topics occupy public awareness by determining how much coverage those issues receive, and where that coverage is situated. In addition to influencing which issues are on the political agenda, framing theory [10] suggests that the media construct frames that influence how those interviews are presented. Frames can incorporate definitions of problems, diagnoses of causes, and moral judgements about those causes and suggested solutions [11], and these elements of media representations influence audiences' constructions of their own individual-level frames, in turn influencing their attitudes towards those problems, causes and proposed solutions [10].

Through agenda setting and framing processes, mass media coverage influences which issues the public are aware of, and what their attitudes towards those issues are; public attention towards an issue has been shown to correlate with media focus on that issue [12], and media frames have been shown to influence recipients' appraisals and decision-making [13]. Media content has been found to influence public understandings of SHS, specifically [14]. Given the influence the media have over public understandings and attitudes, public health policy development and advocacy can benefit from understanding mass media representations of issues.

A key part of framing a problem is the construction of the affected groups, and therefore the population targeted by any suggested solutions, as constructions of groups can influence how audiences appraise solutions. Schneider and Ingram [15] suggest that policymakers may categorise target populations by two axes: power and social construction. In this typology, a group can be politically weak or powerful, and can be constructed either positively or negatively [15]. Children are a politically powerless, positively-constructed group that attract sympathy and, when characterised as a target group, potentially engender support for legislative solutions. In the realm of tobacco control legislation specifically, Freeman, Chapman and Storey [16] describe the need to protect vulnerable children as *'an almost invincibly powerful sub-text'* (p.64) against which industry lobbyists are unwilling to argue.

In this study we examine a decade of UK newspaper reporting on issues surrounding children's exposure to SHS, analysing the prominence given to different aspects of the issue, the representations of the problem(s), constructions of affected groups and appraisals of legislative solutions. We focus particularly on children's exposure to SHS in vehicles, which recently became prominent in

UK political debate. We anticipate that this study is the first quantitative content analysis of UK newsprint coverage of children and SHS.

Methods

Twelve UK national newspapers and six Scottish national newspapers with high circulations [17] were selected to represent each national perspective. Using a typology employed in previous content analyses of UK newspapers [18–20], three different genres of newspaper were included to ensure that the sample represented a diverse range of readership profiles. Tabloid genre newspapers ($n = 6$) are printed in the tabloid format and tend to be sensationalistic and attract a predominantly working class, politically diverse readership. Middle-market tabloid newspapers ($n = 4$) are also in the tabloid format, but are more serious and attract predominantly right wing, middle class readers. Serious ($n = 8$) genre newspapers have traditionally been published in the broadsheet format, are serious and politically diverse with a broadly middle class readership. Table 1 lists the publications used by region and genre. The timeframe, beginning 1st January 2004 and ending 16th February 2014, allowed baseline measurement of news reporting prior to the implementation of smoke-free legislation in Scotland in 2006, and encompasses the vote in the House of Commons

Table 1 Overview of articles by region, genre and publication

		All articles		Front page articles	
		n	%	n	%
UK (n = 221)					
Serious (n = 51)	Daily Telegraph	28	6.6	3	23.1
	Guardian	16	3.8	0	0
	Observer	7	1.7	1	7.7
Middle-market tabloid (n = 97)	Daily Mail	71	16.8	n/a[a]	n/a[a]
	Express	20	4.7	0	0
	Mail on Sunday	3	0.7	1	7.7
	Sunday Express	3	0.7	0	0
Tabloid (n = 73)	Mirror	50	11.8	0	0
	Daily Star	19	4.5	0	0
	Sunday Mirror	4	0.9	0	0
Scotland (n = 201)					
Serious (n = 138)	Scotsman	67	15.9	2	15.4
	The Herald	61	14.5	5	38.5
	The Sunday Herald	6	1.4	1	7.7
	Scotland on Sunday	4	0.9	0	0
Tabloid (n = 63)	Daily Record	57	13.5	0	0
	Sunday Mail	6	1.4	0	0
Total		422	100	13	100

[a]Nexis database entries for the Daily Mail do not list page numbers

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empowering the UK government to introduce legislation to prohibit smoking in private vehicles carrying children on 10th February 2014.

Researchers searched the *Nexis* database with the term: "*smok! OR tobacco OR cig! OR second hand smok! OR passive smok!" AND "babies OR baby OR child! OR kid! OR infant! OR early years OR toddler! OR tot! OR parent! OR mum! OR dad! OR car! OR vehicle!*". The search retrieved 1572 articles. Researchers read each article and removed 1150 that met any of the following exclusion criteria: article is from an Irish edition; article is from the TV guide, review, sports, travel, weather or readers' letters sections; article is a duplicate of a previously-included articles; less than half of the article text is relevant to children and SHS. The exclusion criteria were chosen to ensure that the sample contained only news articles relevant to the issue of children and SHS. Following the application of the exclusion criteria, 422 articles remained.

Researchers developed a coding frame with which to record the relevant manifest content of the articles. An initial coding frame structure was established from a priori knowledge about the topic, including the following thematic categories: health risks to children; adults and primary carers; environment; policy responses; societal and cultural factors. To organically generate emergent themes, researchers read 100 randomly-selected articles, adding thematic codes to the thematic categories in the coding frame as they emerged. Further batches of 20 articles were read until no further novel codes emerged. Table 2 lists the thematic categories that comprised the final coding frame.

Researchers recorded the relevant manifest content of each article using the coding frame. Manifest content is that which is presented overtly and is quantifiable. It differs from latent content, which requires interpretive reading of meanings underlying surface-level data [21]. While latent content analysis is useful for nuanced qualitative analysis of representations of themes, manifest content analysis excels in allowing themes to be observed more broadly throughout a large sample, using quantitative analysis to identify trends and understand relationships between themes and other features of reporting. Each article was coded separately by two researchers, and each article could be coded for multiple themes. A coding definition document was updated throughout the coding process and used as a reference tool to ensure articles were coded consistently. In cases where researchers coded the same article differently, they discussed their interpretations of the text until consensus was reached. If the process of reaching consensus required that the definition of a code be altered, previously-coded articles were checked to ensure that their coding was consistent with the updated definition.

Table 2 Thematic codes by frequency

	Total	
	n	%
Health risks to children		
Mentions children as victims of SHS exposure	280	66.4
Mentions that SHS is related to children's health	261	61.9
Mentions harms to foetuses from SHS during pregnancy	144	34.1
Mentions exposure-duration or concentration of SHS as health risk	109	25.8
Mentions later-life biological harms to children of SHS	72	17.1
Mentions behavioural harms to children of SHS	64	15.2
Mentions children as advocates against SHS	53	12.6
Mentions third-hand smoking as a harm to children	17	4.0
Adults and primary carers		
Mentions non-specified adults' smoking behaviours	226	53.6
Mentions parents' awareness of SHS and behaviour modification	120	28.4
Mentions poor parenting in relation to SHS and children	72	17.1
Mentions parents as unaware or lacking education about SHS	65	15.4
Mentions parental deprivation, lack of education or unhealthy lifestyles	62	14.7
Mentions mothers' smoking (exc. during pregnancy)	51	12.1
Mentions parents' awareness of SHS and no behaviour modification	49	11.6
Mentions fathers' smoking	38	9.0
Mentions harms to mothers of smoking during pregnancy	31	7.4
Environment		
Mentions harms to children of SHS exposure in the home	143	33.9
Mentions harms of SHS exposure in vehicles to children	116	27.5
Mentions harms to children of SHS exposure in public places	35	8.3
Policy responses		
Mentions solutions for SHS other than legislation	142	33.7
Mentions arguments supporting prohibition of smoking in vehicles carrying children	100	23.7
Mentions arguments opposing prohibition of smoking in vehicles carrying children	73	17.3
Mentions consequences for children of the smoking ban in public places	63	14.9
Mentions a ban on smoking in public places to protect children from SHS	54	12.8
Mentions other policies limit children's exposure to SHS	45	10.7
Mentions other countries' policies to protect children from SHS	29	6.9
Societal and cultural factors		
Mentions anti-legislation stance (excluding smoke-free car legislation)	67	15.9
Mentions the costs of SHS to society (economy, health, loss of life etc.)	61	14.5
Mentions the vilification of, or and attacks on, smokers	47	11.1
Mentions de-normalisation of smoking	41	9.7

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Data were analysed with Stata 11 [22]. Crosstabs and frequency tables were used to produce descriptive statistics. Spearman non-parametric correlation tests were used to measure the direction and significance of changes in the frequency of reporting over time. Paired t-tests were used to measure differences between two observations. Statistical significance is defined as $p < 0.05$.

Ethical approval for this project was granted by the University of Glasgow College of Medicine and Veterinary Science research ethics committee.

Results

Overview of sample
During the sample period of 1st January 2004 to 16th February 2014, 422 articles reporting on SHS and children were published within the 18 sample publications. Of those 422 articles, thirteen (3.1 %) were published on front pages. Table 1 lists the number of articles and front page articles by publication, genre and region.

Publications were separated into those distributed throughout the UK, including Scotland, ($n = 10$) and those distributed exclusively within Scotland ($n = 6$). These totals exclude two UK publications (the serious genre Sunday Telegraph and the tabloid genre Daily Star on Sunday) which printed no relevant articles and are not represented in the sample. More than half ($n = 221$, 51.0 %) of articles were printed in UK publications. Scottish publications printed 33.5 articles per publication, while UK publications printed 18.4, suggesting that issues related to SHS and children had a higher newsprint profile in Scotland compared to the UK as a whole.

Seven of the publications represented the serious genre, four middle-market tabloid and five tabloid. In absolute terms, serious genre articles were most frequent ($n = 189$, 44.8 %), followed by tabloid ($n = 136$, 32.2 %), while middle-market tabloid articles were least frequent ($n = 97$, 23.0 %). However, there was little difference in the average number of articles per publication; serious genre publications printed 23.6 per publication, middle-market tabloids printed 24.3, and tabloids printed 22.7.

Articles reporting on SHS in vehicles carrying children
Nearly one third of articles ($n = 129$) reported on SHS in vehicles carrying children, either by discussing harms posed to children by SHS exposure in vehicles ($n = 116$, 27.5 %), or by mentioning arguments for or against legislation intended to reduce children's exposure to SHS in vehicles ($n = 105$, 24.0 %). Per publication, middle-market tabloids (10.3) reported on SHS in vehicles carrying children more frequently than did serious (6.5) or tabloid (6.0) publications. Scottish and UK sources published the same number of articles per publication (7.2).

One quarter ($n = 105$) of articles mentioned arguments for or against legislation intended to reduce children's exposure to SHS in vehicles. Supportive arguments ($n = 100$, 95.2 % of the 105 articles mentioning arguments for or against) were significantly ($p < 0.000$) more frequent than critical arguments ($n = 73$, 69.5 %). Two-thirds ($n = 68$, 64.8 %) of articles mentioning arguments reported both supportive and critical arguments. Thirty-two (64.8 %) articles exclusively mentioned supportive arguments, while five (4.8 %) exclusively mentioned critical arguments. The only year in which critical arguments ($n = 19$) outnumbered supportive arguments ($n = 17$) was 2014, but the whole year was not represented in the sample.

Trends in reporting over time
There was a gentle, but non-significant overall increase in the frequency of articles per year, with a peak of 73 articles in 2011, largely related to the BMA's call for a ban on smoking in all vehicles, including those not carrying children [1]. The frequency of articles mentioning SHS in vehicles carrying children ($n = 129$) increased significantly (p = 0.003) across the sample period, as did the proportion of the wider sample for which they accounted ($p < 0.000$), indicating that it became an increasingly prominent aspect of the topic of children and SHS. While only 22 relevant articles were published in 2014, this accounts only for a month and a half, in which the number of articles published per day ($n = 0.5$) was greater than in 2011 ($n = 0.2$). Figure 1 illustrates the frequency of relevant articles over time, and highlights the major policy events corresponding with peaks in reporting.
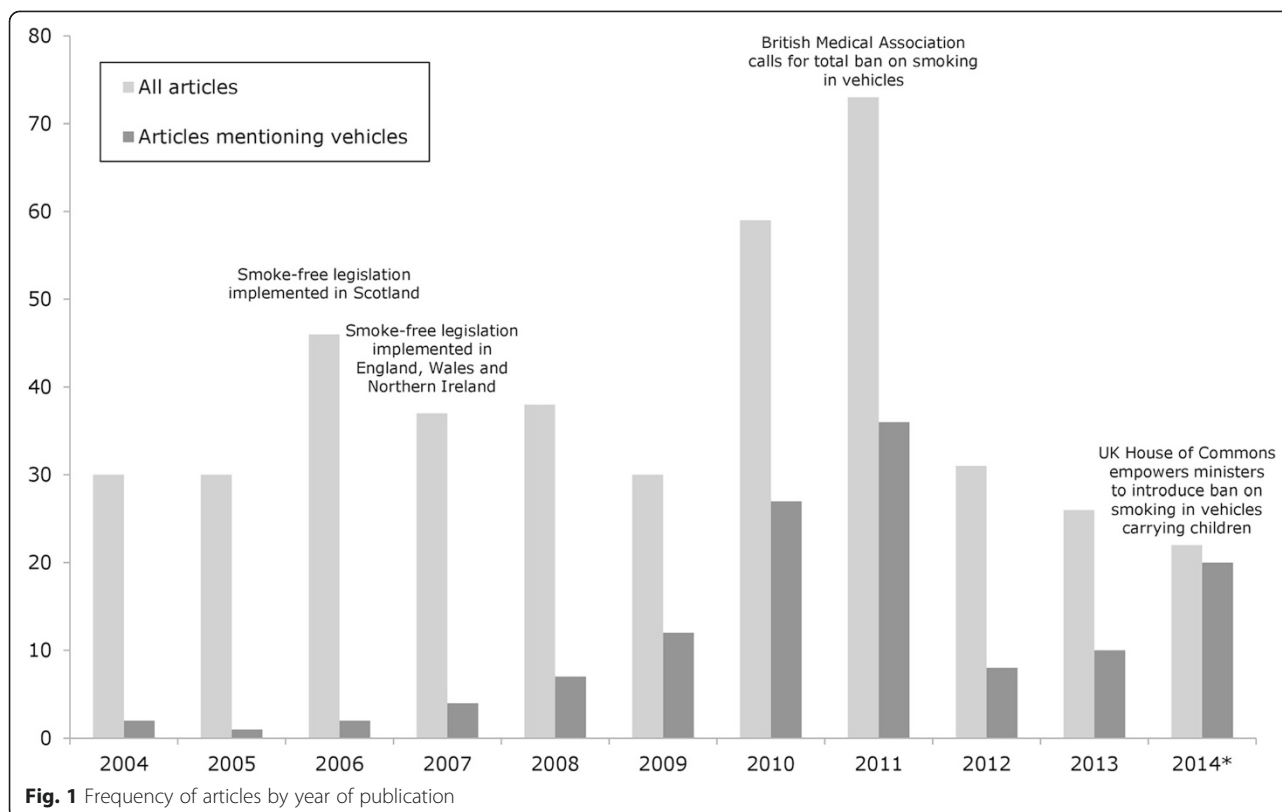
Representations of threats to children
Articles frequently framed SHS as a general threat to children's health ($n = 261$, 61.9 %). Specific types of harms mentioned included later-life biological harms, such as cancers ($n = 72$, 17.1 %), and behavioural harms, such as associations with depression ($n = 64$, 15.2 %). Two-thirds ($n = 280$) of articles used language characterising children as victims of SHS, and a quarter ($n = 109$) mentioned the roles of exposure duration and atmospheric concentration in SHS risks. Seventeen (4.0 %) articles mentioned third-hand smoking, while one third ($n = 143$) mentioned harms to children from SHS exposure in the home.

Despite being widely characterised as victims of SHS, children were not always portrayed as passive; 53 (12.6 %) articles mentioned that children play the role of advocates against SHS, either through direct attempts to dissuade adults from smoking, or indirectly in campaigners' use of children's experiences within advocacy strategies.

Discussion
Reporting on issues related to children and SHS grew in frequency across the sample period, punctuated by

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Fig. 1 Frequency of articles by year of publication

policy debate events, and coverage was more frequent in Scottish publications than UK publications. The proportion of articles that were published on front pages (3.1 %) was smaller than that proportion in studies of newsprint coverage of the H1N1 outbreak (4.7 %) [23], the obesity epidemic (3.9 %) [24] and minimum unit pricing for alcohol (5.9 %) [25] employing similar methods. McCombs [26] highlights front page positioning as a cue that communicates a topic as highly salient, and our findings indicate that the topic of legislation to prohibit smoking in cars carrying children may have been lower on the news agenda than these other health issues, though the differences are not stark.

The issue of prohibiting smoking in private vehicles carrying children became increasingly prominent in newspaper news coverage over the sample period. Arguments in favour of legislation designed to prohibit smoking in vehicles carrying children were reported significantly more frequently than arguments against, suggesting a tone of coverage relatively favourable to legislation, although not as overwhelmingly so as in the Australian debate [16]. Articles largely identified SHS as a threat to children's health and characterised children as victims, contributing to a frame sympathetic towards legislation designed to protect children [15, 16]. The focus on the protection of vulnerable children may have invoked the sub-text described by Freeman and colleagues [16], which may go some way to

explaining the predominantly supportive coverage of the proposed legislation. A qualitative analysis of a subsample of the articles studied in this project found that children were characterised as in need of protection from smoking adults' behaviours [27].

The only year in which critical arguments outnumbered supportive arguments was 2014, a period of frequent reporting in the weeks before and immediately following the vote in the House of Commons empowering the UK government to introduce legislation to prohibit smoking in private vehicles carrying children, and the lodging of the Smoking (Children in Vehicles) (Scotland) Bill in the Scottish Parliament. This late increase in critical arguments supports Harris and colleagues' [28] recommendation that policy advocates should expect increased opposition in the final weeks preceding a policy event.

Legislation ensuring smoke-free indoor public spaces across the UK has been effective [29–32] and popular [33], and private vehicles carrying children have been identified as a next step in smoke-free legislation [1, 3, 34]. The rising profile of the issue across our sample period will be welcomed by advocates of the legislation and policy developers can draw confidence from the relatively positive representations of legislative solutions in the media, which could be an influence on, and indicator of, public reception. Advocates involved in tobacco control and public health in jurisdictions outside the UK may be able to apply

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the findings of this UK case study in planning future advocacy work, whether related to SHS exposure, tobacco control or broader public health issues.

Some limitations of this research should be considered. While quantitative content analysis allows the manifest content of large samples to be examined broadly, it is not suited to studying specific themes in detail. Further research could use qualitative analysis to explore specific aspects in greater depth, such as how different arguments are represented. A limitation inherent to content analysis is that claims about authors intentions and audiences' interpretations cannot be made; complementary audience reception research could compare media representations with public perceptions of the issues. Finally, our exclusive focus on newsprint is at the expense of insight into representations within other media, which further research might incorporate.

Conclusions

The issue of children's exposure to SHS has become increasingly prominent in UK newspapers. The predominantly supportive representation of arguments about legislation prohibiting smoking in vehicles carrying children is a positive sign for advocates engaged in the debate, and may serve as encouragement for policy-makers. Our findings echo recommendations from existing literature that communicating with the public about the harms of SHS can be more effective if messages focus on the vulnerability and powerlessness of children, and that advocates should be wary of, and prepared to offer rebuttals to, late surges in arguments opposing legislative change in the days preceding policy events.

Abbreviations
SHS: Second-hand smoke; UK: United Kingdom.

Competing interests
Sheila Duffy is the Chief Executive of ASH Scotland. The authors declare no additional conflicts of interest.

Authors' contributions
CP and KW coded articles and contributed to the development and refinement of the coding frame. CP analysed the data and drafted the initial manuscript. SS and SD contributed to the direction of the analysis and manuscript. SH developed the study design and contributed to the manuscript. All authors read and approved the final manuscript.

What is already known on this subject?
Laws prohibiting smoking in enclosed public spaces have been effective in the UK and internationally, but second-hand smoke (SHS) remains a risk in the enclosed private spaces of homes and vehicles, particularly to children. Further legislation might further limit children's exposure to SHS by prohibiting smoking in private vehicles carrying children. Media framing has been demonstrated to influence audiences' attitudes towards issues, and media content has been found to influence public understandings of SHS. Frames that identify children as victims may be particularly persuasive. Improving understandings of mass media representations of issues surrounding second-hand smoking could help to improve public health policy development and advocacy.

What this study adds?
This study illustrates how UK national newspapers represented the issues of children's exposure to second-hand smoke. Articles frequently identified SHS as a threat to children, who were characterised as victims. Arguments in favour of legislation to prohibit smoking in private vehicles carrying children were mentioned more frequently than arguments opposing the legislation, although there was a late increase in critical arguments towards the end of the sample period, coinciding with a vote in favour of the legislation in the UK House of Commons. We suggest that public health advocates engaged in media debates around legislation may benefit from highlighting the vulnerability of children, and should prepare for surges in opposition arguments preceding policy events.

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Theme II: Policy debates

Paper VII

HILTON, S., WOOD, K., BAIN, J., **PATTERSON, C.**, DUFFY, S. & SEMPLE, S. 2014. Newsprint coverage of smoking in cars carrying children: a case study of public and scientific opinion driving the policy debate. *BMC Public Health,* 14, 1116.

Newsprint coverage of smoking in cars carrying children: a case study of public and scientific opinion driving the policy debate

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Abstract

Background: Media content has been shown to influence public understandings of second-hand smoke. Since 2007 there has been legislation prohibiting smoking in all enclosed public places throughout the United Kingdom (UK). In the intervening period, interest has grown in considering other policy interventions to further reduce the harms of second-hand smoke exposure. This study offers the first investigation into how the UK newsprint media are framing the current policy debate about the need for smoke-free laws to protect children from the harms of second-hand smoke exposure whilst in vehicles.

Methods: Qualitative content analysis was conducted on relevant articles from six UK and three Scottish national newspapers. Articles published between 1st January 2004 and 16th February 2014 were identified using the electronic database Nexis UK. A total of 116 articles were eligible for detailed coding and analysis that focused on the harms of second-hand smoke exposure to children in vehicles.

Results: Comparing the period of 2004–2007 and 2008–2014 there has been an approximately ten-fold increase in the number of articles reporting on the harms to children of second-hand smoke exposure in vehicles. Legislative action to prohibit smoking in vehicles carrying children was largely reported as necessary, enforceable and presented as having public support. It was commonly reported that whilst people were aware of the general harms associated with second-hand smoke, drivers were not sufficiently aware of how harmful smoking around children in the confined space of the vehicle could be.

Conclusions: The increased news reporting on the harms of second-hand smoke exposure to children in vehicles and recent policy debates indicate that scientific and public interest in this issue has grown over the past decade. Further, advocacy efforts might draw greater attention to the success of public-space smoke-free legislation which has promoted a change in attitudes, behaviours and social norms. Efforts might also specifically highlight the particular issue of children's developmental vulnerability to second-hand smoke exposure, the dangers posed by smoking in confined spaces such as vehicles, and the appropriate measures that should be taken to reduce the risk of harm.

Background

Since 2007 there has been legislation prohibiting smoking in all enclosed public places throughout the UK [1], with Scotland being the first to implement the law in 2006 [2]. In the intervening period interest has grown in considering other policy interventions to further reduce the harmful effects of second-hand smoke (SHS) exposure to children. This interest largely stems from fears

that following the implementation of the legislation, smoking would be displaced to the home environment. However, evidence suggests that this did not occur and that a by-product of the legislation is that there has been an increase in the number of smoke-free homes [3,4].

One explanation for the widespread acceptability of the legislation is that it may have reflected a growing awareness about the harms of SHS exposure and marked a shift in attitudes towards the need for legislation to protect vulnerable groups, such as children [5]. This may have arisen from the intense media reporting and high profile public health campaigns about the harms of

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SHS that preceded and accompanied the introduction of the legislation. Similar high levels of compliance following positive media reporting have occurred in other countries after the introduction of similar smoke-free laws [6].

Kitzinger [7] notes that the level of media attention correlates with the degree of salience these issues have for the public and that public concern. Policy attention rises and falls in response to shifts in media coverage rather than with any changes in the actual size of the problem in the real world. Thus, the more news coverage an issue receives, the more important the issue may be perceived to be. With indoor public spaces no longer a major source of SHS exposure, the micro-environments where exposure continues include the private spaces of the vehicle and home. There appears to be little appetite for legislation on restricting smoking in the home [8] but the situation with respect to smoking in vehicles is more open to debate with health professionals, charities and politicians arguing the case for restrictions since 2007 [9-11].

Scotland's recently published 'Tobacco Control Strategy' includes a commitment to reducing people's exposure to SHS and to setting a target to reduce children's exposure [12]. One commitment in the strategy is the need for a social marketing campaign to highlight the dangers of SHS to children in confined spaces and there is some evidence to suggest that such a campaign might find public support. For example, a recent British Lung Foundation (BLF) survey of 8–15 year olds found that 86% of the children who took part supported legislation to prohibit smoking in vehicles carrying children [13-15]. Further, since the private space of the vehicle is already subject to legislation, ranging from restrictions on smoking in work vehicles, mobile phone usage, laws on the use of seat belts and child-baby carriers; further legislation in this area might be seen as palatable to the public.

Looking wider afield, some states and provinces in the United States, Canada and Australia have already introduced legislation prohibiting smoking in vehicles carrying children [16]. In the UK the British Medical Association has called for further action on smoking in vehicles [17] and at a devolved level the Welsh assembly has recently announced that legislation banning smoking in vehicles carrying children will be introduced, and the Northern Irish assembly has called for increased awareness raising about the issue, with the prospect of legislative changes should the education approach not bear fruit [18]. In Scotland, on 28th May 2013, MSP Jim Hume proposed a draft 'Smoking (Children in Vehicles) (Scotland) Bill' to prohibit smoking in private vehicles. On 30th January 2014, the final proposal was lodged at the Scottish Parliament, achieving the necessary cross-party support from MSPs (at least 18 signatures) to proceed on the first day of proposal. Additionally, in

England on the 10th February 2014, the House of Commons passed an amendment to the Children and Families Bill, empowering ministers to introduce legislation preventing smoking in vehicles carrying children [19]. As noted by Seale [20] empirical research on the role of the media in the development of health policy is an underdeveloped area. Yet having a more nuanced understanding of how the debate is being framed by the media will offer new insights into the role the news media play in propagating ideas about the acceptability of further smoke-free laws to protect children. This study aims to examine how the newsprint media have reported the debate about protecting children from SHS in cars over the past 10 years with the aim of providing public health advocates with useful insights for future communication strategies.

Method

We selected nine newspapers (six published across the UK and three published specifically for a Scottish readership) with their corresponding Sunday editions. This created a total sample of 18 newspapers. Of these eight were 'serious' newspapers (formerly known as 'broadsheets'), four were 'middle-market' tabloid newspapers and six were 'tabloid' newspapers. This typology has been used in other newspaper analyses to represent a range of readership profiles diverse in terms of age, social class, and political ideology [21]. A time frame of 1st Jan 2004 to 31st Dec 2013 was selected to allow a baseline measure of news reporting on SHS prior to the enactment of the first UK smoke-free legislation in Scotland in 2006. This timeframe was then extended to 16th February 2014 to take account of articles published the week following the amendment to the Children and Families Bill on the 10th February 2014. Articles were identified using the electronic database Nexis UK. The search terms used were (where '!' indicates a wildcard): *"smok! OR tobacco OR cig! OR second hand smok! OR passive smok!"* AND *"babies OR baby OR child! OR kid! OR infant! OR early years OR toddler! OR tot! OR parent! OR mum! OR dad! OR car! OR vehicle!".*

The search yielded 422 news articles. All these articles were read by two researchers using inclusion and exclusion criteria. Articles were excluded if: the content did not relate to issues reporting on SHS in vehicles and its effects on children; they were published in Irish (Eire) editions of the newspapers; they were duplicate articles, letters, advice, TV guides, sport, weather, obituaries and review pages. Following the filtering process, a total of 116 articles were deemed eligible for detailed coding and analysis. These news articles were re-read and thematically coded using a qualitative software program NVivo 10 to organise data. Written summaries of these thematic categories were developed and cross-checked by three researchers (SH, KW, JB). To identify patterns

across the data the constant comparative method [22,23] was adopted. What emerged from the articles were themes around the dominant ideas and arguments about the rationale, feasibility to developing smoke-free vehicle laws in the UK, and arguments presented in opposition.

Results

Over the past decade, 116 news articles reported on SHS in vehicles and its effects on children in these newspapers. Of these articles 40.5% (n = 47) were published in 'serious' newspapers, 31.9% (n = 37) in 'mid-market', and 27.6% (n = 32) in 'tabloid' newspapers. In the period leading up to the introduction of the Scottish, Northern Irish and Welsh smoke-free public places legislative changes (with exceptions in Wales and Northern Ireland), and the English smoke-free work places legislative changes (between 2004 and 2007) only seven articles (6.0% of the total identified) were published relating to SHS in vehicles and its effects on children. However from 1st January 2008 to 16th February 2014, 109 articles (94.0% of the total identified) were published, with the highest annual rate of publication occurring in 2011 (n = 32). Comparing the 'baseline' period 2004–2007 (generally prior to implementation of smoke-free laws in public places) with the period 2008–2014 suggests a ten-fold increase in reporting on the topic of SHS in vehicles and its effects on children.

From our analysis of the 116 news articles three dominant themes emerged: 111 articles mentioned the problem of SHS vehicle exposure, 91 articles mentioned arguments reporting on the feasibility of smoke-free vehicle laws as a policy solution to the problem, and 65 articles mentioned the counter-arguments.

Key arguments presented to highlight the problem of SHS vehicle exposure to children

1. *SHS exposure is a major health risk to children*
   Almost all of the articles reported that SHS was harmful to the health of children. A wide range of respiratory conditions, illnesses and diseases were attributed to the effects of SHS, with some articles highlighting the ongoing risks to health in later life such as the risk of developing cancer. It was reported that: "children were at particular risk of damage from SHS due to their faster breathing rates and less developed immune systems" (The Scotsman, 16th Oct 2012). Further, there was a tendency to highlight the differences between adults and children to demonstrate the developmental vulnerability of children.
2. *There is a dangerously high level of SHS exposure in confined spaces like vehicles*
   Vehicles were described as one of the main places of exposure to SHS remaining for children following

the smoke-free laws. Various figures and statistics were reported throughout the news articles as evidence of the scale of the problem and to highlight how many children were regularly being exposed to SHS while in vehicles. It was common for articles to emphasise the issue of vehicles being a 'confined space' and that this posed a greater risk because of the high concentrations of harmful particles which could exceed air-quality standards. Children were described as 'confined' 'trapped' and 'legally exposed' to breathe in harmful pollutants. To further highlight the point a few articles compared levels of SHS in vehicles in the UK with: "industrial smog in cities such as Beijing or Moscow..." (The Herald, 7th Sept 2011), and with smoke levels found in bars pre-legislation (The Express, 18th Jun 2009).

3. *Drivers are unaware that opening the window is not enough*
   Linked to the above argument was the reporting that opening a window was an insufficient response to these "poisonous particles" (Journalist, The Scotsman, 20th Jan 2011) and that it was not suffice to protect their children from the harms (Daily Record, 28th May 2013). This led to reporting that people were well aware of the harms associated with SHS, but that people were often unaware of how harmful smoking in vehicles could be to children breathing in that smoke.
4. *Adults that smoke in vehicles carrying children are irresponsible, child needs protected from them*
   Another key theme to emerge as an argument for smoke-free vehicle laws was the issue that there is a duty to protect children from harms of "thoughtless", "seriously bad" (Journalist, The Sunday Herald, 21st Sept 2009), "selfish" (Journalist, Daily Star, 20th Jan 2011) parents, and that only people "... with half a brain would poison a car full of kids with fag smoke" (Journalist, The Express, 25th Mar 2010). These parents were described as "knowing what they're doing. And that's why legislation is probably, albeit unfortunately, necessary" (The Sunday Herald, 21st Sept 2009).

Arguments reporting on the feasibility of smoke-free vehicle laws as a policy solution to the problem

1. *Legislative action is necessary*
   The current situation for children was described as being 'unfair' and as 'requiring intervention' in several articles. BLF and ASH Scotland spokespersons often were quoted as stating that a law to prevent smoking in vehicles would be justified on the basis of children's health 'alone'. It was suggested that: "As a society, creating such a

measure is a powerful statement of intent about our commitment to the health of our children" (Daily Star, 7th Oct 2010). Some policy advocates went further arguing that children have: "the right not to be harmed" (Jim Hume, Liberal Democrat Party Member of the Scottish Parliament, The Scotsman, 29th May 2013) and to be protected (Alex Cunningham – Labour Party Member of Parliament, Daily Record, 23rd Jun 2011).

2. *Legislative action is enforceable*
It was pointed out that the vehicle is actually a 'semi-public space' (Daily Mail, 16th Sept 2009). One editorial in The Scotsman stated: "Critics, of course, do not question an extension of the ban to cars as such, but argue it would be unenforceable. But it is no more so than compulsory seatbelts or a ban on dangerous driving. The law reaches into cars already. And the vast majority would accept the legitimacy of a smoking ban" (Editorial, The Scotsman, 24th Mar 2010). Many articles reported claims that publicity and education campaigns were not enough to change people's behaviour, suggesting that nudging people to change their behaviours had been shown, "to fail time and again" (BMA, The Daily Telegraph, 16th Nov 2011). It also emerged from the articles that several other countries had already introduced similar legislation and that it had good public support and had been enforceable.

3. *Legislative action changes attitudes*
A number of opinion polls were also reported across the news articles suggesting that the majority of people would support a legislative action and that it would likely lead to a further changes in people's attitudes towards the social acceptability of smoking around children. One article described legislation as "a benchmark of decency and declaring through law that something is unacceptable". Noting the same goes for all other areas of public life where something that used to be tolerated has been ruled to have no part in modern life. (Journalist, The Guardian, 31st May 2013). In this sense legislative action was also presented as building on past legislation and on public support for existing smoke-free legislation (BMA, The Daily Telegraph, 16th Nov 2011).

Presenting the counter-arguments

1. *A lack of evidence on the harms of SHS exposure to children in vehicles*
There were some opposing voices challenging the assertion that SHS is harmful to children and questioning the strength of evidence on SHS. The tobacco industry funded lobby group, 'Forest', offered

quotes throughout news articles over the decade describing the evidence as "weak" (Daily Record, 16th November 2011). It was also claimed that the evidence for the dangers of SHS was "based on junk statistics" (Libertarian Alliance, Daily Mail, 17th Nov 2011) and to infer that the risks from SHS exposure were deliberately being exaggerated.

2. *The wrong focus for legislative action*
It was suggested that other sources of environmental pollution were far more dangerous to people's health: "the greatest environmental health risk comes not from cigarette smoke but pollution caused by power stations and car exhausts" (Journalist, The Sunday Herald, 28th Mar 2009). It was also suggested that there are more dangerous threats to children's health, listing: "poor diets, no sport, illiteracy, homelessness, emotional abuse, female circumcision, parental absenteeism" as examples (Journalist, The Observer, 20th Nov 2011). Critics argued that instead of legislation, information and education campaigns would be more successful in stopping parents from smoking in vehicles, "education, not coercion is the solution" (Daily Mail, 16th Sept 2009). Legislation was described as: "heavy-handed" (Simon Clark, spokesperson for Forest, The Daily Telegraph, 17th Jun 2009) and an over-reaction to the scale of the problem: "using a jackhammer to crack a nut" (Journalist, The Observer, 20th Nov 2011).

3. *Unenforceable legislation*
Across the news articles critics suggested that the legislation would be "difficult" to enforce (The Express, 16th Jul 2011) with lobbyists describing it as "almost impossible" (Forest, Daily Mail, 30th Mar 2007). Questions were raised around who would enforce the legislation given the cuts to police budgets, and it was argued that the legislation would be another: "example of the diversion of police away from their essential business of stopping real crime" (MP, Daily Mail, 17th Nov 2011). Reference was also made to the potential confusion arising from one country enacting legislation while the neighbouring country did not, leading drivers unintentionally to break the law.

4. *Erosion of smokers' rights*
Commonly cited in articles that reported opposition to the legislation was claims about smokers' rights being "under threat" (Forest, Daily Mail, 30th Mar 2007), "eroded" (Forest, Daily Mail, 1st Feb 2010) and "breached" (Journalist, Daily Star, 7th Oct 2010). It was argued that this legislation in vehicles would go "beyond what is acceptable in a free society" (Forest, Daily Mail, 24th Mar 2010) and it was presented that: "...we all have the right to make

certain choices free from state interference."
(Editorial, The Scotsman, 16th Oct 2012). Another
article described smokers as: "the most harassed,
demonised and bullied community in Britain today"
(Journalist, The Mirror, 25th Mar 2010). It was also
argued that it was only a small step towards further
restrictions on where people were allowed to smoke
in their homes and if laws in vehicles were
successful it would be a "triumph for the nanny
state" (MP, Daily Mail, 1th Nov 2011).

Discussion

This study offers some of the first insights into how the
UK newsprint media are framing the current policy de-
bate about the need for smoke-free vehicle laws to pro-
tect children from the harms of SHS exposure. The key
findings from our analysis are that the increased news
reporting on the harms of SHS exposure to children in
vehicles and recent policy debates indicate that scientific
and public interest in this issue has grown over the past
decade. Further, legislative action to prohibit smoking in
vehicles carrying children was largely reported as neces-
sary, enforceable and presented as having public support,
and it was commonly reported that whilst people were
aware of the general harms associated with SHS, drivers
were not sufficiently aware of how harmful smoking
around children in the confined space of the vehicle
could be.

The tobacco industry has a formidable record of re-
sisting legislation and of developing new marketing
strategies, including strategies of trying to keep smoking
in public view against a backdrop of it becoming an in-
creasingly de-normalised pubic activity [24]. They use a
wide range of actions to seek to undermine tobacco con-
trol, such as through direct lobbying and the use of third
parties including front groups, allied industries and aca-
demics [25]. However, it is of note that in this analysis
most of the reporting suggested that legislative action to
prohibit smoking in vehicles carrying children was pre-
sented as necessary, enforceable and as having general
public support, with the little opposition coming largely
from the tobacco industry funded lobby group 'Forest'.
To gain influence in the policy debate, these lobbyists
appeared to have focused their arguments around the
issue of whether legislation is necessary and how it will
infringe smokers' freedoms, rather than on arguing
about the health harms of SHS exposure to children.
While the voices opposed to legislation in this study are
predominantly those of industry lobby views, Bowditch
argues that some social theorists, such as Furedi, also
perceive the legislation as a regressive invasion of
privacy [26]. Nevertheless, in this media discourse those
opposing legislation seemed outnumbered and on the
fringe of the central arguments.

Over the decade there was a huge increase in news
reports covering this issue, with the greatest occurring
after the 2006/2007 smoke-free legislation. This in-
creased volume of coverage is one way in which the
news media help propagate and shape public under-
standings of the harms of SHS to children and potential
policy interventions. In a similar study conducted by
Freeman et al. [27] examining print media in Australia,
over half of the newspaper articles examined used the
argument that SHS is harmful to children's health, a
claim only disputed in 4 out of 296 articles. Likewise,
our study found few articles arguing these now widely
held facts.

Sato [28] has suggested that part of the process of get-
ting issues onto the policy agenda consists of creating a
'package of ideas' about the facts and feasible solutions
to a problem. Our analysis showed that in presenting the
key facts about the problem of SHS to children while in
vehicles, articles widely reported on the scale of the
problem by presenting information on the number of
children exposed to SHS in vehicles. Other well tried
tactics, were to question or deny the harmful health
effects of products and create controversy about estab-
lished facts with critics often preferring an educational
rather than legislative approach despite it being con-
sidered a less effective way of tackling health issues like
alcohol and tobacco abuse [29,30]. Norman et al. [31]
further suggest that educational campaigns may have
less impact on those in socioeconomically deprived
households, who are more likely to be exposed to the
effects from public health issues such as SHS.

Some of these facts were identified as key evidence
which could be traced back to research studies, inclu-
ding Akhtar and colleagues 2007 survey [3], and more
recently Moore et al's survey conducted in 2012 across
304 primary schools (in Scotland, Wales and Northern
Ireland) which showed that post- smoke-free legislation
25.7% (1148 out of 4466) of children "whose family
owned a car reported that smoking was allowed in their
car" [32]. Similarly to Akhtar et al's [3] and Moore et al's
[32] results, we found that whilst there may be a grow-
ing public awareness of the harms associated with SHS
exposure generally, many people were less aware of the
particular risks associated with smoking in vehicles car-
rying children. Some research information was presented
throughout the newspaper articles to highlight the issue
of children's developmental vulnerability and suscepti-
bility to the risks of SHS exposure, and the risks posed by
the high levels of SHS in confined spaces like vehicles.
Considering the former, and consistent with findings re-
ported by the Royal College of Physicians [8], the key facts
presented were that children breathe at a faster rate to
adults, have a less developed immune systems and are
more disposed to various respiratory tract infections.

The work of Semple and colleagues was drawn upon as research evidence throughout the newspaper articles in this study to highlight findings to support the fact that ventilation systems and open windows were insufficient to combat SHS exposure in the vehicle [9,33]. During car journeys where smoking took place, Semple et al. found that concentrations of fine particulate matter ($PM_{2.5}$) were on average 85 $\mu g/m^3$ three times the World Health Organisation's 24 hr guidance of 25 $\mu g/m^3$ for indoor air levels. This compared to an average of 7 $\mu g/m^3$ for car journeys where smoking did not occur. As a result, they concluded that children were being exposed to dangerously high levels of SHS in vehicles that allow smoking, even when certain measures are taken to ventilate the air [9]. This suggests that raising public awareness of the wider context of the debate, and in particular, children's vulnerability to SHS exposure in vehicles could be an area that advocates would do well to continue to address.

In terms of Sato's suggestion of getting issues onto the policy agenda by offering feasible solutions to a problem, this analysis found a common discourse portraying children as victims of harm from the thoughtless behaviours of adults and thus policy intervention was needed. This presentation is consistent with other studies [34,35], including Wood et al's [36] study which analysed the newsprint media portrayal of the 'harms to others' from alcohol consumption. Arguments about 'who' is harmed and 'who' is responsible for smoke-free laws in other countries who have already introduced legislation prohibiting smoking in vehicles carrying children, appear similar. Consistent with Thomson and Wilson [16] and Freeman et al. [27], our analysis suggests that when the focus or concern is on children specifically, opponents against smoke-free laws tend to steer away from criticising this particular aspect of the legislation in their media messages.

Moreover, public opinion surveys which ask about legislation involving the protection of children provoke a great deal of support. Buchanan et al. [37] examined a 2008 YouGov online survey of 3329 adults over the age of 18 living in the UK. This survey reported that 76% of people would support a smoking ban in vehicles carrying children under 18. Similar to our study, arguments against this smoke-free legislation were that it would be unenforceable. This argument has been cited in other studies, perhaps unsurprisingly as critics such as global tobacco companies tend to repeat claims which are translated across different countries [27,38]. However, it was notable in our analysis and in Freeman et al's [27] study, that advocates provided examples of laws already enacted successfully in vehicles such as compulsory seatbelt and infant carrier usage, and mobile phone restrictions.

Lobbyist and critics opposing further smoke-free legislation often use an entire host of arguments, remaining consistent across jurisdictions [24]. This was true of the 2006 smoke-free legislation in Scotland which prohibited smoking in enclosed public places. The tobacco industry argued that the legislation would displace smoking to the home, it would cause economic loss, and it would not have any effect on smokers quitting [5]. However, as a by-product of the legislation smoking in the home has decreased [3,4], smokers say it helped them quit [39], and attitudes towards business and job security have been positive [5]. Nevertheless, messages to undermine such protective legislation are commonly regurgitated in public health debates. Parallels can be drawn in this current study with arguments used to oppose plain packaging for tobacco products [40,41], minimum unit pricing for alcohol [42] and taxation on fast food products [43], among others.

Conclusions

In conclusion, the increased level of attention that SHS exposure to children in vehicles is receiving in the print media indicates that this public health issue is gaining in stature. This comes against a backdrop of no mainstream UK or Scottish political party having a manifesto position on this issue during the period of this analysis. Policy advocates might do well to build on this growing debate and to highlight the success of recent smoke-free legislation and of previous legislation relating to in-vehicle and driving behaviour which have promoted a change in social norms. Further, advocacy efforts might target drivers with messages about children's particular developmental vulnerability to SHS exposure, the dangers posed by smoking in confined spaces such as vehicles, and the appropriate measures that should be taken to reduce the risk of harm.

The role that media coverage of SHS in vehicles has played in formulating debate and reflecting public opinion is likely to have been significant. The recent move towards legislating on a smoking ban in vehicles with children in England by the UK government and the bringing forward of the 'Smoking (Children in Vehicles) (Scotland) Bill' by MSP Jim Hume suggests that politicians have caught up with public and scientific opinion on this issue. The harms posed by exposure to SHS in vehicles represent an excellent case-study of the importance of continued media engagement for those involved in developing public health policy.

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Theme II: Policy debates

Paper VIII

PATTERSON, C., HILTON, S. & WEISHAAR, H. 2016. Who thinks what about e-cigarette regulation? A content analysis of UK newspapers. *Addiction,* 111**,** 1267-1274.

Who thinks what about e-cigarette regulation? A content analysis of UK newspapers

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ABSTRACT

Aims To establish how frequently different types of stakeholders were cited in the UK media debate about e-cigarette regulation, their stances towards different forms of e-cigarette regulation, and what rationales they employed in justifying those stances. **Methods** Quantitative and qualitative content analyses of 104 articles about e-cigarette regulation published in eight UK and three Scottish national newspapers between 1 January 2013 and 31 December 2014. **Results** Reporting on e-cigarette regulation grew significantly ($P < 0.001$) throughout the sample period. Governments and regulatory bodies were the most frequently cited stakeholders and uniformly supported regulation, while other stakeholders did not always support regulation. Arguments for e-cigarette regulation greatly outnumbered arguments against regulation. Regulating purchasing age, restricting marketing and regulating e-cigarettes as medicine were broadly supported, while stakeholders disagreed about prohibiting e-cigarette use in enclosed public spaces. In rationalizing their stances, supporters of regulation cited child protection and concerns about the safety of e-cigarette products, while opponents highlighted the potential of e-cigarettes in tobacco cessation and questioned the evidence base associating e-cigarette use with health harms. **Conclusions** In the UK between 2013 and 2014, governments and tobacco control advocates frequently commented on e-cigarettes in UK-wide and Scottish national newspapers. Almost all commentators supported e-cigarette regulation, but there was disagreement about whether e-cigarette use should be allowed in enclosed public spaces. This appeared to be linked to whether commentators emphasized the harms of vapour and concerns about renormalizing smoking or emphasized the role of e-cigarettes as a smoking cessation aid.

Keywords Advocacy, e-cigarettes, media, policy, regulation.

INTRODUCTION

Electronic cigarettes (e-cigarettes) have become increasingly popular in recent years, [1,2] and are broadly considered to be less harmful than tobacco. However, the specific risks of e-cigarette use and exposure are uncertain [3], and e-cigarette regulation is hotly debated [4,5]. Some regard e-cigarettes as useful tobacco cessation tools [6,7], but concerns about negative impacts persist [8,9]. In addition to direct harms, fears exist that e-cigarettes may reverse progress in de-normalizing smoking [10] and stimulate tobacco use, particularly among young people [11].

In the United Kingdom, e-cigarette products containing less than 20 mg of nicotine will be subject to various restrictions under the revised European Union Tobacco Products Directive (EU TPD) [12] from May 2016, while those

containing more than 20 mg, or making medical claims, will need to be licensed as medicines by the Medicines and Healthcare Products Regulatory Agency to be sold. The Scottish Government, UK Department of Health and Welsh Government intend to introduce age-of-sale restrictions and bans on proxy purchasing [13,14]. Additionally, the Scottish Government plans to introduce restrictions on domestic e-cigarette marketing, a register of e-cigarette retailers, an age-verification policy, a requirement to formally authorize under-18s to sell e-cigarettes and restrictions on domestic e-cigarette marketing [13,15].

E-cigarettes have attracted media attention [16]. Policymakers can be influenced by mass media coverage of public interest stories [17] as well as public opinion [18], and media content can demonstrably influence public understandings and opinions [19–23]. Stakeholders

can attempt to exert influence over public and political attitudes by engaging with media coverage of policy debates [24]. Therefore, studying media debates about policy can increase understanding of how stakeholders and their positions are represented, which can help to inform advocacy in future debates in the United Kingdom and elsewhere. This content analysis study examines how stakeholders' positions on e-cigarette regulation were represented in 2 years of UK newsprint media coverage.

METHODS

A time-period of 1 January 2013 to 31 December 2014 was chosen to include the publication of the Scottish Government's Tobacco Control Strategy [25] in March 2013 and the commencement of consultations on e-cigarette regulation by the UK, Welsh [26] and Scottish Governments in late 2014 [27]. The purposive sampling frame included eight UK and three Scottish national newspapers from the tabloid, middle-market tabloid and quality genres [28–30] to ensure that a diverse range of readership profiles was represented [31]. Each publication's Sunday counterpart was included, excluding the *Sun on Sunday*, which is not archived in the Nexis database.

The Nexis database was searched for articles containing three or more hits for the search term 'e-cig OR (electronic AND cigarette!) OR vape! OR vaping', returning 738 articles. Each article was read and 634 were excluded on the basis of: not mentioning e-cigarette regulation; being published in the television review, sports, travel, weather or readers' letters sections of newspapers; or being a duplicate. Following filtering, the sample comprised 104 articles.

The analytical aims were to establish: (1) how frequently different stakeholder categories were cited; (2) how frequently different stakeholder categories were associated with support for, or opposition to, different forms of e-cigarette regulation; (3) what rationales were used to justify arguments about e-cigarette regulation, and how frequently; and (4) which specific regulatory positions those corresponded with. Quantitative analysis was used to address the first three aims, while thematic qualitative analysis [32] was used to address the fourth. Each article was double-coded by H.W. and C.P. Researchers coded overarching themes based on the codes assigned to the data, discussing differences in coding and interpretation of themes to reach consensus. Themes included the regulation of minimum age of purchase, marketing, e-cigarette use in enclosed public spaces and e-cigarettes as medicines.

To collect quantitative data, citations (either direct quotations or indirect mentions) of stakeholders were recorded. Tallies were kept of: how frequently each stakeholder was cited; how frequently they were presented as supporting or opposing regulation in general; how frequently they were presented as supporting or opposing

each specific regulatory measure; and how frequently they were associated with specific rationales for their arguments. A multi-level regression model was used to examine the rate of publication per quarter. To chart the frequency of citations of stakeholder groups against their stances towards regulation, an index was developed to reflect how consistently each stakeholder category was associated with support for regulation. The index expresses the proportion of all positive and negative arguments associated with a stakeholder that were in favour of regulation as a value on a linear scale from -1 (0% supportive) to 1 (100% supportive).

RESULTS

Sample overview

The sample publications published 104 articles covering e-cigarette regulation in 2013 ($n = 28$) and 2014 ($n = 76$), representing a mean of 4.7 articles per publication, per year (Supporting information, Table S1). Fifty-five were published in quality genre publications, 28 in tabloids and 21 in middle-market tabloids. Three-quarters were published in UK publications ($n = 76$). A multi-level regression model indicated that the rate of publication per quarter increased over time ($P < 0.001$), with a peak of 33 articles in Q4 2014 (Supporting information, Figure S1).
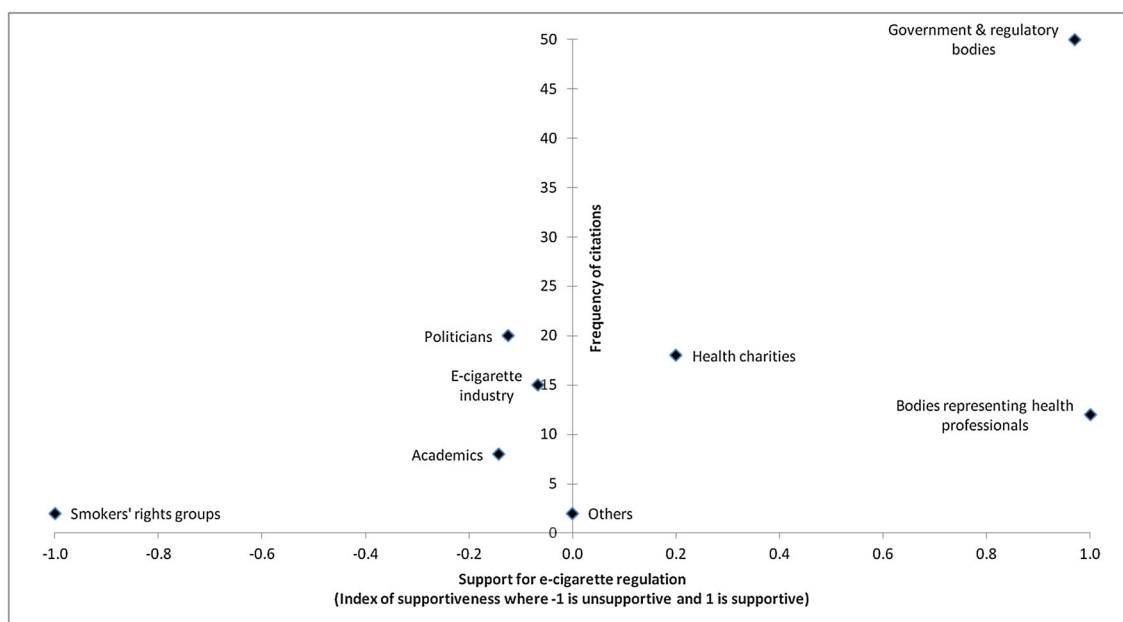
Stakeholder categories

Stakeholders were categorized by organizational affiliation (Table 1). The most frequently cited groups were governmental and regulatory bodies ($n = 50$), politicians ($n = 20$), health charities ($n = 18$) and the e-cigarette industry ($n = 15$). The most frequently cited individual stakeholders were the World Health Organization (WHO, $n = 14$), Scottish Government ($n = 12$), UK Government ($n = 10$) and the health charities Action on Smoking and Health (ASH) ($n = 8$) and ASH Scotland ($n = 8$).

Stakeholders were distributed along a continuum ranging from strong support for, and strong opposition to, e-cigarette regulation (Fig. 1). Governments, regulatory bodies and bodies representing health professionals almost uniformly supported regulation, while the smokers' rights group FOREST (Freedom Organization for the Right to Enjoy Smoking Tobacco) consistently opposed regulation, albeit in just two citations. Politicians, health charities, manufacturers of e-cigarettes and academics were associated with a range of arguments for and against e-cigarette regulation.

E-cigarette industry sources comprised independent companies and the Electronic Cigarette Industry Trade Association (ECITA), which represents 23 e-cigarette brands [33]. E-lites, Socialites, Vapestick and Totally Wicked were associated with opposition to regulation, whereas JAC Vapour and Skycig were associated with support. ECITA was

Table 1 Frequency of arguments for specific regulatory measures by stakeholder category.

Type of regulation	Government & regulatory bodies	Bodies representing health professionals	Health charities	Politicians	E-cigarette industry	Academics	Total
Regulation of minimum purchasing age	11	4	4	2	4	0	25
Regulation of marketing, advertising and promotion	16	3	3	1	0	1	24
Prohibition of e-cigarettes in enclosed public spaces	11	4	1	1	0	0	17
Regulation of e-cigarettes as medicine	11	1	2	1	1	1	17
Prohibition of proxy purchasing	1	0	0	0	0	0	1
Total	50	12	10	5	5	2	84

Figure 1 Frequency of citations of stakeholder categories and their aggregate stance towards regulation (*n* = 104)

associated with equal proportions of arguments for and against regulation. During the sample period, ECITA did not represent any brands owned by transnational tobacco companies (TTCs), and the only TTC-owned brand cited was Skycig (then owned by RJ Reynolds American, currently owned by Imperial Tobacco under the name Blu), which was cited as supporting age restrictions and regulating e-cigarettes as medicine.

Political parties' stances towards regulation corresponded predominantly with their political alignment, consistent with Morley's [34] observation that pro-tobacco forces tend to align with the political right. Labour Party, Green Party and Scottish National Party representatives were presented consistently as supportive of regulation, while Conservative Party, Liberal Democrats and UK Independence Party (UKIP) representatives were presented predominantly as opposed.

Stakeholders' arguments about e-cigarette regulation

Governmental and regulatory bodies (most frequently the WHO, Scottish Government and UK Government), health charities (primarily ASH and ASH Scotland) and bodies representing health professionals [primarily the British Medical Association (BMA)] tended to support the introduction of some form of regulation. Three-quarters (*n* = 111) of the 146 arguments about e-cigarette regulation attributed to stakeholders were in favour of regulation. Tables 1 and 2 detail the frequency of support for, and opposition to, specific types of regulation.

Fifty-two arguments about e-cigarette regulation were not related to any specific measure. Specific measures that stakeholders commented on included regulating: minimum purchasing age (*n* = 25); marketing, advertising and promotion (*n* = 25); the use of e-cigarettes in enclosed

Table 2 Frequency of arguments against specific regulatory measures by stakeholder category.

	Health charities	*E-cigarette industry*	*Smokers' rights groups*	*Total*
Type of regulation				
Prohibition of e-cigarettes in enclosed public spaces	4	2	1	7
Regulation of e-cigarettes as medicine	0	2	0	2
Regulation of marketing, advertising and promotion	0	0	1	1
Total	4	4	2	10

public spaces (*n* = 24); and e-cigarettes as medicines (*n* = 19). Of the 94 statements associated with specific measures, 84 (90.4%) were supportive and 10 (10.6%) opposed. Supporting information, Tables S3 and S4, detail the frequencies of stakeholder categories' uses of different rationales.

A minimum age for purchasing e-cigarettes was the most frequently supported measure (*n* = 25), associated frequently with child protection (*n* = 13). Tom Rolfe of Skycig welcomed 'any regulations which will help us to ensure that under-18s cannot access electronic cigarettes' (*Scotsman*, 8 October 2013). Age-of-sale restrictions were justified by framing e-cigarette use as a gateway to tobacco use (*n* = 5); Mark Drakeford of the Welsh Government highlighted the risk of 'a new generation becoming addicted to [nicotine]' (*Daily Mail*, 3 April 2014).

Marketing regulations were supported frequently (*n* = 24), and only opposed by Simon Clark of FOREST, who argued that 'e-cigarettes are increasingly popular with smokers who are trying to cut down or quit [...] and introducing greater restrictions on advertising, could do far more harm than good' (*Scotsman*, 27 June 2014). Protecting children and young people was mentioned frequently (*n* = 20) in statements advocating marketing regulation; Deborah Arnott of ASH warned of children being 'targeted' by e-cigarette marketing (*Guardian*, 28 April 2014).

Regulating e-cigarettes as medicine was advocated 17 times and only opposed overtly twice, by ECITA. Support was rationalized by the need to ensure product safety and the potential of e-cigarettes in tobacco cessation. Health concerns related predominantly to toxicity of e-cigarette vapour, as well as risks associated with malfunctioning e-cigarettes and the ingestion of e-cigarette liquid. Kevin Fenton of Public Health England described the measure as essential to 'assure people of their safety' (*Daily Telegraph*, 26 November 2014). Deborah Arnott argued that the measure would 'ensure [e-cigarettes] are good quality [...] so they can be made available on prescription' (*Observer*, 25 May 2014). Similarly, Dame Sally Davies, England's Chief Medical Officer, suggested that if the e-cigarette vapour content were to be controlled, e-cigarettes 'might play a useful role in stopping smoking' (*Daily Mail*, 3 April 2014). Criticism of regulating e-cigarettes as medicine highlighted the

burden on small e-cigarette manufacturers and the comparative benefits to TTCs. Katherine Devlin of ECITA warned that regulation might 'close out all the competition [...so TTCs...] could get the whole market share for themselves' (*Daily Mail*, 20 May 2013).

Prohibiting e-cigarette use in enclosed public spaces was argued for 17 times and opposed seven times. The measure lacked the broad-ranging support across stakeholder categories that other measures received, and was thus the key area of disagreement between public health stakeholders. Support for the measure was rationalized by citing: the risks associated with exposure to second-hand vapour; the importance of protecting children; and the risk of re-normalizing smoking. The WHO questioned the safety of second-hand e-cigarette vapour: 'the fact [e-cigarette] exhaled aerosol contains on average lower levels of toxicants than the emissions from combusted tobacco does not mean these levels are acceptable to involuntarily exposed bystanders' (*Sunday Herald*, 31 August 2014). Dame Sally Davies cautioned against 'normalising e-cigarettes' and 'making smoking seem like a normal activity' (*Daily Mail*, 19 May 2014). Dr Ram Moorthy of the BMA warned against reversing progress made towards making smoking 'socially unacceptable' (*Sun*, 22 May 2014).

Rationales used to oppose prohibiting e-cigarettes in enclosed public spaces included their role in tobacco cessation and the limited evidence of risks. Tom Pruen of ECITA argued that 'being able to use [e-cigarettes] indoors is a big incentive for people to move away from tobacco' (*Sunday Herald*, 31 August, 2014). Highlighting the limited evidence base, Neil McKeganey of the Centre for Drug Misuse Research described second-hand exposure fears as 'theoretical' (*Sunday Herald*, 31 August 2014), while Hazel Cheeseman of ASH characterized 'evidence of any harm to bystanders from use of these devices' (*Herald*, 20 August 2014) as absent.

Incomplete evidence of the health risks of e-cigarettes was cited by stakeholders from a range of categories, and used to support arguments both for and against regulation, indicating that different stakeholders used the inconclusive evidence base differently. Promoting a precautionary approach, John Middleton of the Faculty of Public Health stated that 'We don't yet have enough evidence yet [*sic*] of the impact [e-cigarettes] are having on other people'

(*Daily Mail*, 17 December 2014). Conversely, Charlie Hamshaw-Thomas of E-Lites, advocating a harm-reduction approach, characterized the BMA as '"experts" without evidence playing puppet to the pharmaceutical industry's agenda' (*Scotland on Sunday*, 20 October 2013).

DISCUSSION

We examined UK newsprint representations of the growing e-cigarette regulation debate, highlighting the stakeholders involved and their stances towards regulation. The research findings are subject to certain limitations. As with most media analyses, the extent to which stakeholders' actual positions were distorted in media representations is unknown. However, given the impact of media representations on public understandings, media representations are no less important than stakeholders' true positions. A limitation specific to this study is that a larger sample size, achieved by either a broader sampling frame or longer search period, would have increased the external validity of the findings. Further, as data on citations of stakeholders were collected as simple tallies, we could not investigate trends in representations of stakeholders over time. Future research could analyse media coverage subsequent to 2014 to examine how representations of stakeholders have evolved over time. Additionally, including other forms of media, including social media, may have added depth to understandings of the debate, particularly as e-cigarette regulation seems to garner considerable engagement online. Despite these limitations, this study makes a valuable contribution to the literature on e-cigarette regulation [16]. By enabling comparison between the e-cigarette debate and other tobacco control debates, our analysis may inform future advocacy in the United Kingdom and internationally. We suggest that public disagreement between tobacco control advocates may be harmful to shared health policy goals. However, rather than recommending against public debate, we would instead recommend emphasizing the substantial areas of consensus that exist.

Our data illustrate increased newspaper coverage of the e-cigarette debate throughout 2013 and 2014, and comparison with data on UK newspaper coverage of other health legislation debates indicates that the e-cigarette regulation debate occupied a similar number of articles as legislation to prohibit smoking in vehicles carrying children [35], but substantially fewer articles than proposed legislation to impose a minimum price per unit of alcohol [28]. The sharp rise in reporting on e-cigarette regulation in late 2014 suggests that the profile of the issue may have continued to rise in 2015.

We found that stakeholders supported e-cigarette regulation much more frequently than they opposed it, suggesting that the overall tone of media representations of the debate was favourable to regulation. To an extent, this is foreseeable in a debate about potential regulation, as the presence of arguments for regulation is a prerequisite for the presence of opposing arguments. Governments, regulatory bodies, politicians and health charities were broadly aligned in support for regulation of purchasing age, regulation of marketing and regulating e-cigarettes as medicine, and these measures were rarely opposed. Widespread support for the regulation of e-cigarettes as medicine is probably founded on a perceived need to set the parameters of what e-cigarettes and refills may be composed of, both for the protection of consumers, as highlighted in our data, and to ensure a uniform product for which further regulation can be designed. Purchasing age restrictions and regulation of marketing were frequently justified based on the need to protect children from harm, a rationale that industry actors have been unwilling to oppose in past tobacco control debates [36].

Prohibition of e-cigarette use in enclosed public spaces was the key area of disagreement within and between the most vocal stakeholder groups. While comparable restrictions have been successful when applied to tobacco [37], evidence of the risks of second-hand vaping is scarce [38], which may go some way to explaining the relative lack of enthusiasm for the measure. Advocates rationalized their support primarily by citing the risks of re-normalizing smoking behaviours, which are more abstract and perhaps less persuasive than direct health risks. Additionally, those positioning e-cigarettes as tobacco cessation tools portrayed the prohibition of their use in enclosed public spaces as counterproductive, as it would reduce tobacco smokers' incentives to adopt the (assumed) safer alternative. The disagreement exhibited by health charities on this issue illustrated the challenge they face in finding balance between the promise and threat of this disruptive technology.

Transnational tobacco companies had a low profile in the media debate in 2013 and 2014, indicating that TTCs' attempted rehabilitation through engagement in harm reduction debates [39,40] is not evident in UK newsprint coverage. Our data cannot explain the near-absence of TTCs in the debate, but various explanations may be posited: TTCs may have chosen not to draw attention to their growing share of the e-cigarette market; TTCs may be confident in their financial capacity to adapt to regulation (which could be prohibitively expensive for independent e-cigarette companies); and TTCs may anticipate that regulation to standardize the nicotine content of e-cigarettes will encourage profitable dual use of tobacco and e-cigarettes. Additionally, TTCs may have decided not to reach conclusions ahead of the EU TPD in April 2014, in which case their profile may have risen subsequent to the sample period.

Tobacco control advocates have previously been unified largely around the regulatory measures they support [41], and coalitions and the promotion of unambiguous messages have been instrumental to successful advocacy [42,43]. Our analysis found that public health stakeholders demonstrated less unity in the e-cigarette regulation debate than in previous tobacco control debates [41], and the two open letters addressed to the WHO by opposing groups of public health and medical experts [41] indicate that that disunity exists beyond media representations. The first letter advised the WHO to recognize the harm reduction potential of e-cigarettes and reverse recommendations for regulation that would suppress their availability, while the second supported the WHO's existing precautionary stance on e-cigarette regulation. Disagreement between public health stakeholders may be explained partially by the absence (prior to October 2014) of official international guidance on the issue, as WHO guidance has been found to have aided consensus-building in past tobacco control advocacy [43–46]. Variations in stakeholders' positions might also be explained by the incomplete evidence base concerning the harms and benefits of e-cigarettes, differing starkly from the comprehensive evidence for the harms of tobacco.

Rather than solely attributing disagreements to limited evidence, we suggest that more fundamental barriers to agreement lie in the frameworks within which actors interpret and use that evidence base. Fairchild & Bayer [4] argue that differing assessments of e-cigarettes stem from conflicting philosophical frameworks of public health: harm reduction and precaution. Harm reduction can be described as a pragmatic approach acknowledging that people will inevitably use drugs, and viewing risk minimization as a worthy public health goal, whereas precautionary approaches focus on the complete elimination of harmful habits, arguing that simply reducing harm is undesirable and cautioning against serving the interests of TTCs. The same evidence may be interpreted differently depending on the framework that is applied. Our analysis indicates that stakeholders using rationales commensurate with harm reduction (such as promoting e-cigarettes as tobacco cessation aids or highlighting the lack of evidence of the risks of e-cigarettes) tended to oppose the prohibition of e-cigarette use in enclosed public spaces, while those using precautionary rationales (such as cautioning against the re-normalization of smoking and the potential role of e-cigarettes as gateways to tobacco) tended to favour comprehensive regulation. Stakeholders may model their stances towards regulation based on their pre-existing adherence to a specific framework, but equally these frameworks may be used to post-rationalize stances towards regulation.

Divisions between public health stakeholders exist within other tobacco control debates [47]. For example, some forms of smokeless tobacco are promoted as tobacco cessation aids by some [48] and cautioned against by others, who highlight their carcinogenic content, the involvement of TTCs in their production and marketing and the inconclusive evidence of their effectiveness in tobacco cessation [49]. Given that conflict within the tobacco control community is neither a new phenomenon nor one that relates exclusively to e-cigarettes, confronting disagreement is of relevance beyond the e-cigarette regulation debate. Industry actors with a history of opposing tobacco control legislation could exploit disagreement by characterizing tobacco control regulation as contested. This threat may incentivize public health advocates to develop common ground further and highlight existing agreement to present unified, unambiguous positions.

This paper contributes to the body of literature concerning mass media representations of public health policy and the dynamics of e-cigarette regulation debates. While public health stakeholders are largely unified in support of e-cigarette regulation, the disagreement that exists, concerning primarily the regulation of e-cigarettes in public places, is evident in the public sphere. Given the persuasive power of presenting consistent messages in tobacco control debates, achieving consensus and agreeing on unambiguous advocacy positions on e-cigarette regulation would probably increase the political effectiveness of the public health community. As public health stakeholders draw from divergent frameworks, reaching consensus is not simply a case of awaiting further research evidence, but one of negotiating shared values concerning how evidence is interpreted and presented. If critical engagement with public health frameworks is impractical, then a more pragmatic goal for the tobacco control community may be to refrain from commenting on contentious aspects of regulation in the public sphere to avoid gifting opponents of tobacco control the opportunity to exploit uncertainty, and focus instead on common areas of agreement. Ongoing debates about e-cigarette regulation and other tobacco control issues in the United Kingdom and abroad may benefit from incorporating this approach.

Declaration of interests

None.

Acknowledgements

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Supporting information

Additional supporting information may be found in the online version of this article at the publisher's web-site:

Figure S1 Frequency of articles about e-cigarette regulation by quarter

Table S1 Summary of articles by region, genre and publication.

Table S2 Frequency of citations of stakeholder categories.

Table S3 Frequency of mentions of rationales for regulation by stakeholder category.

Table S4 Frequency of mentions of rationales against regulation by stakeholder category.