Preparing for an evaluation of new UK restrictions on TV food advertising and online food promotion: developing a concept map and collecting baseline data for a process evaluation

Research Proposal

Dr Jean Adams *[a], Prof Martin White [a], Hannah Forde [a], Dr Peter Scarborough [b], Prof Richard Smith[c], Dr Emma Boyland[d]

[a] Centre for Diet and Activity Research (CEDAR), MRC Epidemiology Unit, University of Cambridge School of Clinical Medicine, Box 285 Institute of Metabolic Science, Cambridge Biomedical Campus, Cambridge, CB2 0QQ

[b] Nuffield Department of Population Health, University of Oxford, Old Road Campus, Roosevelt Drive, Headington, Oxford, OX3 7LF

[c] F.05 Medical School Building, College of Medicine and Health, University of Exeter, Heavitree Road, St Luke's Campus, Exeter, EX1 2LU

[d] Department of Psychology, Institute of Population Health, University of Liverpool, Eleanor Rathbone Building, Bedford Street South, Liverpool, L69 7ZA

*Correspondence to Dr Jean Adams: jma79@medschl.cam.ac.uk

Introduction

In July 2020, the UK Department of Health & Social Care (DHSC) published an intention to ban advertisements for food and drink products high in fat, salt or sugar (HFSS) on TV before 9pm as well as online promotion for these products. We will submit a funding application to the NIHR Public Health Research Programme for a Full Evaluation of this intervention. Our Full Evaluation will primarily take a natural experimental approach using routine data that can be accessed retrospectively. This means that substantial de novo baseline data collection will not be needed. However, it will be important to develop a concept map of the intervention to understand the full potential of the intervention to impact on relevant outcomes; and to collect early qualitative data to understand who, at this point in time, stakeholders view as the key actors and key actions involved in influencing intervention development, design, prioritisation and implementation. Collecting qualitative data now will help to avoid recall bias associated with retrospective data collection.

Developing and consulting widely on our concept map will help guide the design of the Full Evaluation to ensure all important potential impacts, and how to measure them, are captured. We have received Rapid Funding from the NIHR Public Health Research Programme to complete these activities.

Marketing includes a wide range of activities that companies use to communicate with potential clients. The four Ps of the 'marketing mix' are: product, place, price and promotion. Paid for advertising is one type of promotion. Other types of promotion include, for example, building games around products (advergames) and social media 'influencers'. Systematic reviews and meta-analyses consistently confirm that food marketing in general, and television (TV) food advertising and online food promotion in particular, influences children's food preferences and consumption. [1–5] Impact on adults have been less studied, [1,5] but are likely to be similar.[6] Though this sort of evidence largely only measures micro-level impacts (e.g., on individuals), there are also macro-level impacts (e.g., societal level) that suggests adults are profoundly affected.[7] The World Health Organisation (WHO) recommends that member states limit children's exposure to marketing for less healthy foods.[8]

Whilst there has been a recent decline in TV viewing in the UK, average viewing time remains around three hours per day for ages 4 years and above.[9] Overall, 18% of UK advertising spend is for TV slots and at least 63% for online slots.[9] We recently estimated that 6.4% (95% CI: 2.0-13.8) of UK childhood obesity and 5.0 (1.5-10.9)% of overweight is attributable to HFSS TV advertising.[10] We also estimated that a pre-9pm ban on HFSS TV food advertising would result in a 4.6 (1.4-9.5)% reduction in childhood obesity and a 3.6 (1.1-7.4)% reduction in childhood overweight prevalence. Effects were two-fold greater in the least vs most affluent social groups and would likely be amplified by additional restrictions on online food promotion. Thus, there is reason to believe that the intervention will lead to non-trivial reductions, and greater equity, in child overweight and obesity.

Few evaluations of food advertising restrictions have been conducted worldwide.[11] The intervention will be one of the most restrictive approaches internationally.[11] As well as the potential for our results to influence future review of current UK policy, other countries and supra-national organisations (e.g. WHO, UNICEF) are eager to learn from the UK experience. Evaluators are encouraged to test theories as well as evaluate interventions.[12] From this perspective, the intervention provides a case study in how the food industry responds to food promotion restrictions. The 'balloon effect' proposes that restrictions on one type of marketing may lead to increases in others, as companies and other aspects of the food system adapt.[13] Our Full Evaluation will test this theory by exploring whether restrictions on specific aspects of food promotion on TV and online lead to knock-on effects across other aspects of the marketing mix. Our results will help policymakers

understand whether and how any unintended 'balloon effects' of food marketing restrictions can be anticipated and addressed by future policy.

Policy interventions delivered to whole populations can rarely be subject to randomised controlled trials (RCTs).[14] Whilst RCTs are useful to study the acute effects of food advertising exposure,[1] it is impractical to randomise individuals, or groups, to food promotion restrictions for extended periods. Instead, our Full Evaluation will use natural experimental methods and study designs.[11] To maximise value for money, we will primarily use data collected routinely and accessible retrospectively.

The intervention

Although many details of the proposed intervention remain unclear, it is expected that two-component intervention will be implemented before the end of 2022:

- A ban on advertisements for HFSS products shown on live broadcast TV from 0530-2100.[15]
- A ban on online promotions intended for, or likely to come to the attention of, UK children which have the effect of promoting identifiable HFSS products. Whether this will be a total ban or a 0530-2100 ban has not yet been decided. In either case, it is proposed that:
    - adverts in broadcast video on demand (e.g. All 4) will be banned from 0530-2100;
    - social media influencers, commercial text messaging and email, all website advertising, paid-for search listings, preferential listings on price comparison sites, in-game advertisements, in-app advertising, advergames and advertorials will be included;
    - business-to-business communications, factual claims, and communication with a principal purpose of facilitating online transactions will be excluded.[16]

Research questions

The aims of this Rapid Funding work are:

A. To develop a concept map of how the intervention may impact on health, the commercial food system and society. This will be used to guide design of the full evaluation.

B. To collect baseline data on stakeholders' perspectives on who were the key actors, and what were the key actions, in influencing intervention development, design, prioritisation and implementation. Together with follow up interviews funded as part of the full evaluation, these will provide insight into how perspectives on these issues changed as the intervention was finalised, implemented and became normalised.

Methods

Summary

We will use Group Concept Mapping to address Aim A. Around 20 stakeholders representing relevant Government, civil society, academic and commercial organisations will be invited to one of two workshops. At these, they will generate and structure potential pathways through which the intervention may impact on health, the commercial food system and society. This will be used to inform the design of the Full Evaluation. We will address Aim B by recruiting around 15 stakeholders to take part in one-to-one qualitative interviews exploring their perceptions of the problem, policy and politics of the intervention.

Concept mapping to address Aim A

Design

A concept map is a "diagram of proposed relationships among a set of concepts….about a particular question….or topic".[17] Concepts maps can be used to help organise ideas, demarcate an area of interest and plan evaluations. Group concept mapping is a structured approach that is flexible to many public health contexts that will be used to identify the wider systems impacts of the intervention.[18,19] We will use a modified version of group concept mapping to create a concept map of the potential pathways through which the intervention may impact on health, the commercial food system and society. Following guidance from the NIHR School of Public Health Research,[20,21] we will use the final map to guide the design of, and integration of results from, our Full Evaluation.

Participants

We will invite up to 20 stakeholders to one of two group concept mapping workshops (approximately 10 participants in each workshop plus the research team). Each workshop will last approximately three hours. Stakeholders will be purposively sampled from our existing and developing networks to represent relevant Government organisations (e.g. DHSC; DCMS; PHE and its successors); civil society (e.g. the Children's Food Campaign, the Obesity Health Alliance); academia; and relevant food, television, internet and advertising industries (e.g. the Food and Drink Federation, the Committee on Advertising Practice).

Inclusion criteria for workshop participants will be that they: currently work in one of the sectors listed above; have professional knowledge and experience of food marketing regulation policy within the sector they currently work in; and are willing and able to take part in the research. We will identify a longlist of potential participants in the first instance from the existing and developing networks of applicants and collaborators. These networks include CEDAR's extensive database of dietary public health stakeholders. We will develop a spreadsheet reflecting the sectors of interest

described above, populate this with stakeholders from CEDAR's database and ask applicants and collaborators to add to this from their own networks. In order to select and prioritise those on the longlist of potential participants for invitation, applicants and collaborators will classify those on the longlist as 'must ask', 'should ask', or 'could ask'.

If we are unable to identify enough potential participants via this method, we will use snowball sampling asking recruited participants to suggest others who may meet the inclusion criteria. Rapid Funding applicants, collaborators and project staff will also be invited to join the workshops. Workshops will include around 15 participants each –considered a manageable number.[19]

Recruitment

Participants will be invited to take part in workshops by email. They will be provided with a written participant information sheet via email and invited to ask any further questions via email or phone before making a decision to attend. If no response is received within 2 weeks, we will send a reminder email. If no response is received 1 week following the reminder email, the contact will be marked as a 'non-response'.

If an individual is willing to take part, they will receive an e-consent link to complete ahead of the workshop. If we have not received their completed e-consent form 1 week prior to the workshop, then we will send a reminder email with the e-consent link. We will send a further reminder email the day before the workshop to all participants, and again include the e-consent link for any participants yet to complete the consent process. If we have not received completed e-consent before the workshop, the individual will not be able to take part.

Data collection

Building on previous work that has used group concept mapping to inform the design of evaluations of population health interventions,[22] we will use the first three steps of group concept mapping (preparation, generation and structuring)[19] and add a fourth (reflection).

Preparation involves setting out the workshop aims and processes, and agreeing the focus area. The workshop facilitator (the PI or research associate (RA)) will introduce the aims and process, remind interviewees of the withdrawal process and that the workshop will be recorded. The facilitator will remind participants of the intervention, propose that the focus area is "what are the potential pathways through which the intervention might impact on health, the commercial food system and society?" and invite participants to help refine this.

Generation is a divergent process where participants individually brainstorm a long list of responses to the focus area and rate these according to their relative importance. Participants will be given

around 15 minutes to generate, on their own, a list of as many responses as possible to the final focus area question (derived from "what are the potential pathways through which the intervention might impact on health, the commercial food system and society?") including pathways to both positive and negative impacts. Participants will then be asked to rate their generated pathways informally, in order of perceived relative importance.

Structuring is a convergent process where participants organise and critically reflect on ideas and relationships between concepts. Participants will be asked, in turn, to contribute responses to the focus area question in order of rated importance. These will be structured in real time using concept mapping software shared on-screen with participants, with new concepts and relationships added to a draft map as participants suggest them. Once all responses have been included, participants will be invited to reflect on the emergent map, adding concepts and relationships as required. Finally, participants will be thanked, reminded of the final steps of map development and asked to confirm if they wish to continue taking part. They will be reminded that we will also be inviting them to take part in individual interviews to address Aim B on a separate occasion.

Reflection. After the workshops, we will merge the two concept maps into one visualisation. We will circulate the merged version to all participants by email and use a webform that contains questions about the visualisation in order to seek final suggestions for change. We will use these suggestions to produce a final map.

To maximise value for money and minimise time demands on participants, workshops will take place via Zoom and will be scheduled around participants' availability. We will use a combination of Microsoft PowerPoint slides and Miro software (https://miro.com/) to provide instructions to participant and visualise participants' contributions, respectively. Our data will consist of the concept maps, audio recordings of the workshops, and feedback returned by webform. Audio recordings will not be transcribed; instead, we will refer to them if anything in the maps is unclear. For the same reason, another member of the Cedar research group will also act as 'observer' in the workshops, taking notes that may aid the interpretation and merging of the maps.

Next steps

The research team will consider methods for studying the highest priority pathways in the final concept map, reflect on these with the Steering Group and make final decisions about the design of the Full Evaluation. Key considerations will include the relative importance of different pathways in the map (as stated by workshop participants), value for money, value of information and data availability. The map will also guide analysis and synthesis in the Full Evaluation.

Interviews to address Aim B

Design

For Aim B, we seek to collect preliminary data to understand the key actors and actions in bringing the intervention to implementation and normalisation. We will structure these according to the Multiple Streams Framework which proposes that the policy process involves a confluence of problems, policy and politics.[23] In the Full Evaluation we intend to augment data collected here with other sources of documentary evidence, and follow up interviews with participants included here. Only baseline data collection is described here.

Participants

We will invite up to 15 stakeholders to take part in interviews. Participants will be purposively sampled to represent the same sectors as recruited for the workshops and will include those workshop participants willing to take part, additional individuals recommended by workshop participants, and additional relevant contacts identified through our extensive existing and developing networks.

Recruitment

Individuals will be invited to take part in interviews using a similar process to the workshops, with a separate participant information sheet.

Individuals will be invited to take part in interviews by email. They will be provided with a written participant information sheet via email and invited to ask any further questions via email or phone before making a decision to attend. If no response is received within 2 weeks, we will send a reminder email. If no response is received 1 week following the reminder email, the contact will be marked as a 'non-response'.

If an individual is willing to take part, they will receive an e-consent link (different to the workshop one) to complete ahead of the interview. We will send a reminder email the day before the interview and again include the e-consent link if not already completed. If we have not received completed e-consent before the interview, we will allow the interviewee to complete the form at the beginning of the interview before switching on the recorder.

Data collection

The interviewer (project RA) will introduce the interview aims and process, indicate that it will be audio-recorded and gain informed e-consent using a webform (if not already received). Interviews will be supported by a pre-piloted topic guide, indicative of question wording. This will probe participants' perceptions concerning the problem, policy and politics of the intervention. Example areas include: the problem that the intervention seeks to solve, other approaches to solving the

problem that may be considered, important individuals and events in the prioritisation of the intervention, the evolution of the design of the intervention, barriers to intervention prioritisation and how these were overcome. If helpful, the interviewer will also take brief interview notes throughout the interview. Each interview will last 45 – 60 minutes.

Follow up

Participants will be asked if they are happy to be contacted in future, to review their interview (in full or in part), to receive research findings, or to be invited to take part in follow up interviews in the Full Evaluation.

Analysis

Recordings will be transcribed verbatim and transcriptions checked by the interviewer. As these interviews are intended to be a baseline for a longitudinal study, we will not conduct a detailed analysis during the Rapid Funding work. In due course, interviews are likely to be analysed thematically,[24] using the Framework method[25] with constant comparison[26] and deviant case analysis to enhance validity. Initial frameworks will be developed from interview topic guides and modified iteratively using emergent themes, so that earlier transcripts influence the analysis of subsequent transcripts. Initial analysis at this stage will help to refine the topic guide for subsequent interviews

Data management and storage

Data from both Aims A and B will be handled and stored in line with MRC Epidemiology Unit data management policies. Transcriptions will be anonymised. Audio files and transcriptions will be stored on secure servers separate from contact details. With permission, contact details will be stored and retained if funding for the Full Evaluation is obtained in order to facilitate re-contact. Anonymised research data will be stored separately from identifiable data, with participants linked by a study code or number that may indicate only the interview source (e.g. civil society, industry etc.). Only authorised members of the research team (or authorised persons acting on behalf of the Sponsor) will be allowed access to the non-anonymised/personal and identifiable data for participants.

Ethics

This Rapid Funding work will be subject to approval from the University of Cambridge School of Humanities and Social Science Research Ethics Committee. As described above, all participants will provide informed consent to take part. Data will be handled and stored in line with MRC Epidemiology Unit data management policies. Transcriptions will be anonymised. Audio files and transcriptions will be stored on secure servers separate from contact details. With permission,

contact details will be stored and retained if funding for the Full Evaluation is obtained in order to facilitate re-contact.

Dissemination, outputs and anticipated impact

The intention of this Rapid Funding work is to help refine the design of the Full Evaluation and collect baseline data for one component of that. We intend to write one peer-reviewed paper describing our concept map as an example of using this method to guide evaluation of public health interventions. We will also produce a research brief describing the final map. We will share this with participants and our wider networks via e.g. institutional newsletters, social media feeds, and direct email.

We anticipate that the key impacts of our Full Evaluation will be detailed understanding of whether and how food advertising restrictions in the UK and elsewhere can be further refined and developed to maximise public health gain. We will develop a dissemination, engagement and impact strategy for the Full Evaluation to achieve these impacts. This will seek to feed our findings and their implications into ongoing policy review in the UK and elsewhere.

References

1. Boyland EJ, Nolan S, Kelly B, et al. Advertising as a cue to consume: A systematic review and meta-analysis of the effects of acute exposure to unhealthy food and nonalcoholic beverage advertising on intake in children and adults. *American Journal of Clinical Nutrition*. 2016;103(2):519-533. doi:10.3945/ajcn.115.120022

2. Russell SJ, Croker H, Viner RM. The effect of screen advertising on children's dietary intake: A systematic review and meta-analysis. *Obesity Reviews*. 2019;20(4):554-568. doi:10.1111/obr.12812

3. Cairns G, Angus K, Hastings G, Caraher M. Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. *Appetite*. 2013;62:209-215. doi:10.1016/j.appet.2012.04.017

4. Cairns G, Angus K, Hastings G. The extent, nature and effects of food promotion to children: a review of the evidence to December 2008. World Health Organization. Published 2009. Accessed February 22, 2021. www.who.int/dietphysicalactivity/Evidence_Update_2009.pdf

5. Mills SDH, Tanner LM, Adams J. Systematic literature review of the effects of food and drink advertising on food and drink-related behaviour, attitudes and beliefs in adult populations. *Obesity Reviews*. 2013;14(4):303-314. doi:10.1111/obr.12012

6. Boyland EJ. *Unhealthy Food Marketing: The Impact on Adults*.; 2019.

7. Cairns G. A critical review of evidence on the sociocultural impacts of food marketing and policy implications. *Appetite*. 2019;136(February):193-207. doi:10.1016/j.appet.2019.02.002

8. World Health Organization. Set of recommendations on the marketing of foods and non-alcoholic beverages to children. World Health Organization. Published 2010. Accessed November 3, 2017. https://www.who.int/dietphysicalactivity/publications/recsmarketing/en/

9. Ofcom. *Media Nations 2020: UK Report 2020*.; 2020. https://www.ofcom.org.uk/__data/assets/pdf_file/0010/200503/media-nations-2020-uk-report.pdf

10. Mytton O, Boyland E, Adams J, et al. The potential health impact of restricting less-healthy food and beverage advertising on UK television between 05.30 and 21.00 hours: a modelling study. *PLoS Medicine*. 2020;17(10):e1003212. doi:10.1371/journal.pmed.1003212

11. Taillie LS, Busey E, Stoltze FM, Renee F, Carpentier D. Governmental policies to reduce unhealthy food marketing to children. *Nutrition Reviews*. 2019;0(0):1-32. doi:10.1093/nutrit/nuz059

12. Ogilvie D, Cummins S, Petticrew M, White M, Jones A, Wheeler K. Assessing the Evaluability of Complex Public Health Interventions: Five Questions for Researchers, Funders, and Policymakers. *Milbank Quarterly*. 2011;89(2):206-225. doi:10.1111/j.1468-0009.2011.00626.x

13. Mora F. Victims of the Balloon Effect: Drug Trafficking and U.S. Policy in Brazil and the Southern Cone of Latin America. *The Journal of Social, Political, and Economic Studies*. 1996;21(2):115.

14. Ogilvie D, Adams J, Bauman A, et al. Using natural experimental studies to guide public health action: turning the evidence-based medicine paradigm on its head. *Journal of Epidemiology and Community Health*. 2019;0:1-6. doi:10.1136/jech-2019-213085

15. Department of Health & Social Care. Tackling obesity: empowering adults and children to live heatlhier lives. Published 2020. Accessed September 14, 2020. https://www.gov.uk/government/publications/tackling-obesity%02government-strategy/tackling-obesity-empowering-adults-and-children-to-live-healthier%02lives#empowering-everyone-with-the-right-information-to-make-healthier-choices

16. HM Government. Introducing further advertising restrictions on TV and online for products high in fat, sugar and salt (HFSS). 2019;(March). https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/795412/hfss-advertising-consultation-10-april-2019.pdf

17. Paradies Y, Stevens M. Conceptual diagrams in public health research. *Journal of Epidemiology and Community Health*. 2005;59(12):1012. doi:10.1136/jech.2005.035121

18. Anderson LA, Slonim A. Perspectives on the strategic uses of concept mapping to address public health challenges. *Evaluation and Program Planning*. 2017;60:194-201. doi:10.1016/j.evalprogplan.2016.08.011

19. Trochim WMK. An introduction to concept mapping for planning and evaluation. *Evaluation and Program Planning*. Published online 1989. doi:10.1016/0149-7189(89)90016-5

20. Egan M, McGill E, Penney T, Anderson de Cuevas R, Er V, Orton L. *NIHR SPHR Guidance on Systems Approaches to Local Public Health Evaluation. Part 1: Introducing Systems Thinking*. : National Institute for Health Research School for Public Health Research; 2019.

21. Egan M, McGill E, Penney T, Anderson de Cuevas R, Er V, Orton L. *NIHR SPHR Guidance on Systems Approaches to Local Public Health Evaluation. Part 2: What to Consider When Planning a Systems Evaluation*. National Institute for Health Research School for Public Health Research; 2019.

22. Penney T, Adams J, Briggs A, Cummins S, Mytton S, Rayner M. How might the Soft Drinks Industry Levy influence sugar consumption and population health in the UK? Development of a systemic theory of change using concept mapping, online Delphi survey and in depth telephone interviews with stakeholders. *In prep*.

23. Kingdon J. *Agendas, Alternatives, and Public Policies*. Pearson; 2003.

24. Denzin N, Lincoln Y. *Handbook of Qualitative Research*. Sage; 2000.

25. Gale NK, Heath G, Cameron E, Rashid S, Redwood S. Using the framework method for the analysis of qualitative data in multi-disciplinary health research. *BMC Medical Research Methodology*. 2013;13(1):1-8. doi:10.1186/1471-2288-13-117

26. Silverman D. *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*. Sage; 1993.