A recipe for action: using wider evidence for a healthier UK

A collection of essays exploring why we need trans-disciplinary approaches to improve the public's health

The Health Foundation

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To view a video of some of the authors pitching their ideas at our 'X Factor for evidence for the public's health' event, please visit: www.health.org.uk/evidence-action-x-factor-event-round

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Introduction

The gap between the evidence that decision makers need and the evidence available to them is a common problem across many sectors. The problem is often framed as one of research translation; the 'evidence producers' need to do better at making their evidence accessible. But this pre-supposes that the right evidence is there, and it just needs to be presented differently and reach the right people.

It is increasingly recognised that addressing the current challenges facing people's long-term health outcomes in the UK isn't simply a problem of translation and access to existing evidence. It is a more fundamental problem: the evidence relevant to population-level action for long-term population health benefit – and the support to produce such evidence – is limited. Producing such evidence requires current public health challenges to be viewed as social, economic, political and cultural phenomena. It requires a wider set of disciplines to be deployed to both understand and address the challenges effectively. Reaching beyond the traditional health disciplines also means that decision makers must learn to be comfortable making decisions in the absence of traditional biomedical 'gold standard' evidence.

The Health Foundation's Healthy Lives strategy aims to support efforts to build the knowledge and evidence for population-level interventions and public policies that improve health

capabilities. It aims to provide policymakers and politicians with clear and viable options that stand the test of real world application.

Over the past decade (and more) there has been much discussion of how we reason about the scientific justification, validity and effectiveness of health interventions. On the one hand, the evidence-based medicine (EBM) movement has sought to transform medical practice into becoming more rational, systematic and effective. Its success in improving outcomes and standardising practice has led to EBM influencing related fields such as public health and public policymaking more broadly. One of the core aspects of EBM is that evidence comes in many forms, and such evidence can be ranked on a hierarchy of validity or trustworthiness. At the top sit the findings from systematic reviews of randomised controlled trials (RCTs). The EBM movement and the use of RCTs, in particular, have become prominent aspects of health policymaking as they can confidently answer the politician's and policymaker's plea of 'just tell me what works?'.

On the other hand, there has been much critique of the plausibility and use of RCTs in public health and of their increasing applications in other social policy domains. It is now well known that there is a positive results bias in scientific publishing, which then causes bias in systematic reviews. Philosophers have also highlighted the limitations and patchiness of the chain of causation attributed to RCTs. In relation to public health or health-promoting interventions, the main issue regarding RCTs and evidence production more broadly has been that many population-level interventions cannot be tested through RCTs for pragmatic as well as ethical

reasons. True, some public health interventions could be tested through an RCT format. But there are many potential population-level interventions that could not. As a result, the evidence about 'what works' is often limited to what is produced from RCTs of individual-level interventions.

As part of our Healthy Lives strategy, we are seeking to catalyse public and scientific discussions on expanding the diversity and conceptions of what constitutes evidence in public health, as well as the types of reasoning used to move from evidence to (public) action. There is an emerging acceptance that addressing the more pernicious health challenges facing the UK requires transdisciplinary and multisectoral coordination. Other disciplines and sectors have to be more than an 'add-on' to the biomedical sciences. More effective public health policies require true engagement and mutual exchange across disciplines. In producing that exchange, some major barriers to overcome are the different conceptions of evidence and reasoning about action. For example, an epidemiologist, a lawyer and an economist will each conceive causation differently. They will each also argue differently about what actions to take as a result, as well as when and how.

The following essays illustrate how different disciplines and professional practices conceptualise evidence and how they reason about moving from evidence to taking action. All contributors were asked to reflect on the problem of childhood obesity, which served as a shared focal point. Their brief was not to solve the problem of childhood obesity but to present their reasoning. Individually and all together, the essays are valuable

for showing that diverse forms of evidence are indeed justifiable – and that there are also diverse ways in which different disciplines and professions achieve their goals.

It is reassuring to see some areas of similarity emerging across the essays. A consistent theme that comes through is the need to be engaged with and close to the people and communities you are working with. Conceptualising personal narratives as evidence, acknowledging the motivations and context of decision making, then testing and re-testing with people ensures that their problems are addressed or their wellbeing is improved. This contrasts to the evidence-producing practices in health sciences that abstract away from people and contexts; too often assuming they are all similar bodies which should be similarly affected by the interventions being researched or implemented. While such abstraction has been enormously helpful in addressing certain health issues in the past, our current and impending health challenges seem to demand we work more closely with the people involved and understand their lived reality. Entrenched health challenges cannot be addressed with generic solutions, but rather through context-relevant and people-centred interventions.

Too often the recognition of the complexity shaping people's health becomes a barrier for action. These essays show that a broad range of disciplines and professional practices share similar goals to medicine and public health, to improve the health and wellbeing of people, and are acting on these goals through a broader appreciation of evidence. A City of London lawyer was able to galvanise a group of senior people from the business sector, working within their culture and reasoning, to mobilise action for improving the mental health of employees.

A city planner designed pathways in order to keep the children active, playful and safe as they walk to school. We would recognise these as public health interventions; they would likely say that it is part of doing their jobs well. The public health community can take heart from the many capable and experienced partners in various fields who will willingly engage when asked.

While appreciating what we can learn from this collection of essays, we should also acknowledge that many other perspectives were not included. We looked beyond the public health sciences and medicine to find potential contributors, but our imaginations and networks are also limited. It is likely that we have missed out on valuable insights that would have come forth had we ventured further into more unfamiliar disciplines and professional practices.

Nevertheless, these essays affirm our belief that opening out the conversation on evidence and its use in public health policies, broadly understood, is both necessary and timely.

Sridhar Venkatapuram and Jo Bibby

Creative-relational inquiry

Dr Marisa de Andrade, University of Edinburgh (School of Health in Social Science)

The Tummy Beast by Roald Dahl[1]

One afternoon I said to mummy,
"Who is this person in my tummy?
"Who must be small and very thin
"Or how could he have gotten in?"
My mother said from where she sat,
"It isn't nice to talk like that."
"It's true!" I cried. "I swear it, mummy!
"There *is* a person in my tummy!
"He talks to me at night in bed,
"He's always asking to be fed,
"Throughout the day, he screams at me,
"Demanding sugar buns for tea.
"He tells me it is not a sin
"To go and raid the biscuit tin.
"I know quite well it's awfully wrong
"To guzzle food the whole day long,

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1   From *Dirty Beasts*, published by Jonathan Cape Ltd & Penguin Books Ltd.
       © The Roald Dahl Story Company Ltd.

"But really I can't help it, mummy,
"Not with this person in my tummy."
"You horrid child!" my mother cried.
"Admit it right away, you've lied!"
"You're simply trying to produce
"A silly asinine excuse!
"*You* are the greedy guzzling brat!
"And that is why you're always fat!"
I tried once more, "*Believe me*, mummy,
"There is a person in my tummy."
"I've had enough!" my mother said,
"You'd better go at once to bed!"
Just then, a nicely timed event
Delivered me from punishment.
Deep in my tummy something stirred,
And then an awful noise was heard,
A snorting grumbling grunting sound
That made my tummy jump around.
My darling mother nearly died,
"My goodness, what was that?" she cried.
At once the tummy voice came through,
It shouted, "Hey there! Listen you!
"I'm getting hungry! I want eats!
"I want lots of chocs and sweets!
"Get me half a pound of nuts!
"Look snappy or I'll twist your guts!"
"That's him!" I cried. *"He's in my tummy!*
"So now do you believe me, mummy?"

But mummy answered nothing more,
For she had fainted on the floor.

Schoolgirl Jemima is overweight. When asked to fill in a survey on how she feels about her body, she will circle 'very satisfied', because food makes her feel safe. It turns out that Jemima has been abused. She turns to comfort eating and, on a subconscious level, she uses food to make herself deliberately unattractive to her abuser. She tells her counsellor that Roald Dahl's *The Tummy Beast* is her favourite poem, but her survey scores are meaningless. It is the stories behind the numbers that tell us what is really going on.

Creative-relational inquiry (CRI) is a dynamic conceptual frame for research that is context-sensitive, experience-near and personal. It engages the political, social and ethical. It problematises agency, autonomy and representation by providing detailed, close-up explorations of public health relationships, using the arts, performance, collaboration and traditional methodological approaches. Instead of speaking or acting on behalf of someone based on existing beliefs, it considers the background of those who dominate narratives and looks for evidence that has been overlooked. Missing voices and new emotive forms of knowledge rise to the surface, to tell us what it means for (sometimes silenced) individuals to be independent and free.

CRI allows my personal experiences as a public health researcher to be part of the research. I speak with my voice as my interpretations aren't value-free – they may influence findings and interventions in ways that aren't aligned with users' views. So, CRI also brings participants' knowledge claims, lived experiences and voices to the research.

CRI proposes that the issue of child obesity, particularly in relation to social inequalities, can be tackled by positioning the individual at the heart of public health. CRI allows their expressions – their evidence, in whatever form is suitable for them – to cut through and breathe life into statistical datasets that provide few or inaccurate insights into their experience of child obesity (something they may not even consider to be a problem). CRI accepts that 'the person' may have valuable recommendations for bringing about change that we, so-called public health experts, do not have access to. People like Jemima become our expert: she decides what counts as evidence. It could be a poem, a diary, hip-hop music – and it's up to us to listen to her.

Understanding child obesity: who am I?

Who am I to propose an understanding of the phenomenon of child obesity? An 'expert' in community-based 'interventions'? A privileged scholar with an understanding of 'valid' research deemed worthy by the scientific community? An academic with enough power or knowledge to assert that my understanding of child obesity is the 'right' one?

From Jemima's perspective, child obesity is more than the result of a complex tangle of psychological, biological, cultural, social and environmental effects. It's the way she experiences life. The way she is treated by others. The way her identity is (co-) constructed. It is the way she experiences emotions – her inner world, subjective truth or reality. And how this meets her outer

world, objective truth or reality – the obesogenic environment skewed towards high fat, salt and sugar foods promoted to those of low socio-economic status.

Jemima knows her diet isn't healthy, and knows how being overweight makes her feel. Jemima decides what child obesity means to her and what actions to take. She is the expert, not me. My own understanding of child obesity would, as Masuda et al (2013) put it, 'include the narratives that reproduce, reinforce, and legitimise particular claims' of this phenomenon. My position as 'expert' would offer expertise that 'subordinates other perspectives', and propose perspectives that 'treat people as "data" rather than formidable sources of knowledge and agency.'

Making Jemima the central agent means her testimony about her lived experiences of the issue becomes the foundation for conceptualising it – for coming up with meaningful ways of tackling it. CRI provides us access to context-sensitive, interpersonal data that can be used in a variety of ways. Public health interventions must accept these types of data, not dismiss them as anecdotal evidence.

Addressing child obesity?

By focusing on Jemima's understanding of child obesity I would not neglect the structural causes of ill health and inequality. For example, the harm done by the marketing of cheap processed foods targeted at Jemima, her family and friends must be addressed too. But top-down interventions imposed without understanding communities' lived experiences can further

stigmatise the marginalised and may widen health inequalities. Academic literature is populated with such examples, and I see it first-hand when conducting research in disadvantaged communities.

Jemima could work with me, health practitioners and third sector professionals to help us understand which mechanisms could help her community. Through co-production – equal and active input by those who use services – we could co-produce appropriate services, policies and outcomes. This relies on trust.

Meaningful engagements must be cultivated over time, as change won't happen overnight. We'll commit to long-term outcomes supported by sustained resources for evolving initiatives. Working collaboratively, we'll use upstream approaches to challenge structural causes of inequalities and child obesity.

Jemima's community will drive the process of change, and become familiar with mutually reinforcing public health responses to child obesity. An example of this is Hastings' 3Cs model: containment of the pathogen (by regulation); counteracting its spread (by community led initiatives); and critical capacity building (with media, marketing and health literacy).

These different kinds of actions have been identified through ongoing research, and often co-produced with communities. We know it's working when community members take ownership of the issue and become instrumental in the (social) change process. They set their own definitions, means of data collection, measurement scales and outcomes.

What is evidence?

Thinking of evidence in a way that doesn't acknowledge the role of creativity hinders access to the human experience. Even positive measures like trust and empathy are difficult to evaluate, so we're talking about 'validating the feels' – recognising that people's views are essential evidence that enable us to understand their stories and outcomes, as well as the inputs, outputs and costs. Often, it's the narrative behind the data that gives the richest picture.

By engaging with the personal, we can contextualise healthy eating and living in practical and sustainable ways for children and their families in specific communities. We can gather data and co-design 'interventions' in ways that are appropriate to them. We can work with community members as they gain confidence to challenge the status quo.

Conclusion

Through the lens of CRI, the challenge of child obesity becomes a real issue for people and communities, rather than an abstract analysis. Inner worlds meet external realities to challenge power structures and traditional paradigms. It is a new way of thinking, being, doing. A new way of collecting data, objectifying the subjective – accessing diverse 'truths' from diverse communities through creative community engagement. Then convincing others that gathering evidence and implementing 'interventions' to understand and tackle complex issues leading to sustained, meaningful change is fundamentally linked to the creative and relational.

Law

Professor John Coggon, University of Bristol Law School (Centre for Health, Law, and Society)

Public health agendas require social coordination. Law is thus of fundamental importance. It secures the legitimacy and scope of institutional measures aimed at assuring the public's health, and provides rules and regulations that themselves might protect and promote health. At public health law's core is the necessarily contestable philosopher's question, 'what makes health public?', as well as the public health activist's question, 'how can health be made public?' With reference to child obesity, this essay explains how law may both serve, and be a constraint upon, public health activities. It also outlines the role of reasons, rules and principles as 'evidence' in the development of the social machinery required to promote and protect health.

Public health law and understanding child obesity

Public health law focuses on the manifestation, implementation and development of formally instituted rules, standards and practices in the overall social, political and regulatory environments. It is a broad field of study and practice, encompassing legislation and case law, as well as 'softer'

modes of governance such as local authorities' regulations and policies. It seeks to establish authoritative bases for health protection and promotion activities (eg empowering agencies to institute health policies), and any limits to potential public health agendas (eg allowing non-health rights such as religious freedoms to supersede health concerns). It also explains how, for example, private law measures may or may not be used to advance health. It is within legal constraints that health may be made public, and through legal or legally-supported measures that health interventions may be advanced.

In understanding child obesity, public health lawyers would explore and debate how existing legal structures frame the challenge, and ask what more the law – as it exists and as it may develop – might do to improve health. Children hold a special place in law, with welfare-focused state interventions in their lives justified in a way that is not true for adults. Nevertheless, there is no complete acceptance of paternalistic interventions.

Public health lawyers would be interested in epidemiological perspectives on potentially effective anti-obesity measures. The weight of evidence available from such perspectives tells us that child obesity invites a complex systems approach, implying the need for broad-ranging legal mechanisms to support and effect change. However, lawyers also look at further 'evidence', in terms of support from more diffuse – and potentially incommensurate – schemes of reasoning, leading to radical disagreement in practice.

Lawyers such as Lawrence Gostin accept and combine evidence from social epidemiology and philosophical theories of justice, using these to support the development of legal frameworks to

advance population health. However, libertarian legal theorists such as Richard Epstein work from political and economic principles that reject such an approach, defending the 'old public health' and arguing that legal interferences with individual autonomy are unjustified and ineffective. In public health law, arguments are based not simply (or even primarily) on scientific reasoning. What is effective from a public health law perspective will be contingent on how and by whom a measure is to be put into practice.

Legal mechanisms to intervene in public health

Law can place general obligations on governmental actors to consider health in all policies. Consider the Well-being of Future Generations (Wales) Act 2015, which requires public bodies to set wellbeing objectives and do what is reasonable to achieve them. These objectives are set by reference to seven wellbeing goals, one of which is a 'society in which people's physical and mental wellbeing is maximised and in which choices and behaviours that benefit future health are understood'. In examining the implications for obesity, lawyers would debate the scope of this statutory duty, how it is implemented, and methods of monitoring how it is exercised and how it achieves accountability.

Such general health-focused obligations (where they exist) cannot supplant the need for directed legal measures. This means that lawyers would also look to areas where more specific legal authority is needed to achieve public health aims. These include the sources of public health agencies' powers and duties,

arguments based on human rights obligations, or the legal basis of measures such as the sugar tax. In each instance, law is a necessary tool for public health, and thus we need to understand how it has been established, and how it is applied or enforced.

We might also consider more disparate means of health promotion, identifying different legal levers that might be pulled. These could include private law mechanisms that protect consumers, family law provisions that make child welfare the paramount concern, or limitations on commercial freedoms to advertise unhealthy foods. Individual legal rights and obligations can contribute to a healthier regulatory – and ultimately social – environment.

Law and governance for the public's health

When considering a transformative agenda – such as reducing child obesity – public health lawyers look to legal rules and principles and examine how relevant actors and institutions may legitimately promote health. As indicated previously, lawyers do not speak with one voice: interpretation, application and monitoring are constrained by differences of opinion on the strength of reasons that support the legitimacy and practicability of legal and regulatory foundations for different powers and measures. Furthermore, different institutions respond differently to different sorts of reasons.

In the courts, 'evidence' from public health law will be bound up in understandings of legal procedures, rules and principles. Advocates advance their reasoning through arguments about the

best interpretation of laws and regulations, the application of precedent and reasoning by analogy. The courts do consider scientific evidence, but alongside and by reference to values, principles and rules that are not born of science. In the context of political bodies that implement and create public health laws and regulations, further modes of 'evidence' will be needed. For bodies such as local authorities, 'evidence' will include the legal basis of their powers: what may they do and under what constraints? Could a public authority, for example, deny junk food outlets a right to operate near schools? 'Evidence' here will not be determined just by the wording of the legal power, or scientific evidence: political and other practical reasoning will also be crucial. With parliament, related but distinct points arise. In legislating to reduce children's consumption of obesogenic products, public health agendas will be restricted by political commitments, parliamentary time and public discourses and priorities.

Conclusion

Laws are part of the social environment. They support and limit public health agendas. Evidence within public health law is context dependent, and rests on reasoning and value judgments that are quite distinct from – potentially anathema to – evidence-based policy. Public health may be a science, but it is also an art. It rests on philosophical and social commitments that cannot be understood purely through scientific methods. Law brings theoretical and practical understandings of the interplays and contests

between legal, political and other modes of reasoning, and of the distinct powers and competences of different institutions. In creating laws and regulations, political and legal reasoning are vital. In implementation, we must understand legal duties, as well as legal and political methods of accountability and enforcement. Without legal understanding, there cannot be a full appreciation of the strength and viability of approaches to improving the public's health.

Engineering

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From electric vehicles to replacement hips, engineers make things. They make things work, they make things work better, and they are always looking for solutions to problems. Public health is similarly solution focused. And there are numerous ways in which engineering is relevant to the health of the population, from developing the built environment, including homes or transport, to process engineering in the food industry, to software engineering for wellbeing apps. These products and processes come from different branches of engineering and involve distinct types of evidence that I cannot explore fully here. Instead, I aim to highlight the general approach an engineer may take to tackle a public health challenge like child obesity. This includes the importance of systems thinking and careful design. I then consider safety cases as one exemplar of the use of evidence in engineering.

Systems approaches to complex problems

Engineers first begin with an analysis of the problem and the goal to be achieved. Importantly, this requires a systems approach. A 2014 report commissioned by the Royal Academy of Engineering identified systems thinking as one of the key

'habits of mind' of engineers. Whether designing a health app or delivering Crossrail, engineers must define the boundaries of the system to be addressed, and consider all the contributing elements and their interactions. This is because, in complex systems, a change to any one element will have a knock-on effect on others.

Child obesity is a similarly complex problem, where any intervention is unlikely to have a linear effect. An engineering approach would, therefore, seek to analyse the system and the interacting elements within it before identifying potential areas for intervention. This may include the needs and behaviour of children, parents and teachers, food consumption, activity levels, information provision, transport infrastructure, access to play space, and interaction with other public health goals. Indeed, the Government Office for Science created such a map in its 2007 *Tackling obesities* report.

A systems approach is also important to make sure potential synergies are identified – making interventions more effective – and unintended consequences are mitigated. For example, reducing road traffic to encourage cycling may also improve air quality, with further benefits for public health. In contrast, improving walking routes may actually increase the accessibility of fast food outlets, and have other unintended consequences.

A second key element of an engineering approach is careful design that is based on good understanding of the people affected by the intervention, including their needs, motivations, constraints, behaviours and diversity. For example, an intervention to address child obesity that promotes stair use in public buildings must also make sure that users with mobility

problems are not excluded or isolated by the intervention. Once users' needs are understood, engineers will undertake an exploratory and iterative design process, developing a range of interventions that can be tested or piloted, for example in 'living labs', prior to further design modification.

Cost effectiveness is also a consideration in this process, so evidence on current and predicted costs of the problem would be incorporated into budgets that could be better spent on prevention. This engineering design process is exemplified in a study by Rogers et al (2010 UbiComp'10, Denmark) exploring whether our buildings could affect behavioural choice – in this case, deciding to use the stairs or elevator. The research team first took time to study the existing environment and how users interacted with and made decisions about using the stairs or elevators.

Based on this, they designed three ambient environment interventions including interactive displays and lighting patterns. Before implementation, these concepts were tested with users through semi-structured interviews, and feedback was incorporated into the designs. The interventions were then piloted in the building and a range of data was recorded, including physical changes in user behaviour, behavioural observation, and subjective user opinion. This range of data was used to evaluate the interventions and select a preferred option. This example emphasises the exploratory and iterative process of engineering design, but also highlights different types of evidence engineers use.

What constitutes evidence for engineers?

As outlined in this example, engineers can draw on a wide range of evidence to evaluate whether an intervention works, and the nature of this evidence will vary by sector and branch of engineering. Perhaps one of the most rigorous exemplars of evidence use in engineering is the development of a 'safety case' in safety critical industries. In safety critical projects, such as the development of an aerospace engine or a chemical processing plant where overall outcomes may not be readily tested, engineers are required to develop a safety case to demonstrate to regulators that all relevant hazards have been considered and processes put in place to protect against these.

This takes the form of a structured argument supported by a body of evidence that can come from a variety of sources. For the development of an engine, for example, this may include modelling and simulation data, materials analysis of individual elements, testing of prototypes, and validation and verification of data. Continuous monitoring over the lifetime of the product is also key. There are a range of benefits to developing safety cases, including the integration of diverse evidence sources into a single coherent argument, facilitating communication among stakeholders, and making assumptions about the project explicit.

In the context of child obesity and public health, the link to such assessment of risk may not be obvious. However, the principle of making decisions about interventions where the overall impact cannot be readily tested is very relevant. An engineering approach is pragmatic and makes such decisions based on a coherent risk-based argument developed from a diverse body of

evidence. Engineers working on transport infrastructure, for example, may develop interventions drawing on local stakeholder engagement and user opinion, modelling studies of traffic and pedestrian movement in the area, and National Institute for Health and Care Excellence guidelines on physical activity and the environment (based on a range of studies but with an emphasis on RCTs).

In another example, engineers developing a health app to promote exercise may bring together data on the quality and security of the software, plus opinion polls or social studies to gauge the needs and habits of the target audience, as well as pilot single-arm studies and RCTs, to develop their product. Engineers draw on existing and real-world data wherever possible. Empirical studies will be conducted only where existing evidence is considered insufficient. Key evidence for informing an engineering response to child obesity will therefore also integrate real-world 'big data' on population health, including behaviour, activity levels, health data and so on.

Together these different sources of data may suggest that certain designs, such as a particular layout of walking or cycling routes or a particular app design, would be most likely to achieve the desired outcome. When implemented, continuous monitoring and evaluation could be undertaken to see how the intervention changes behaviour in practice. In turn, this data would support the improvement of models and simulation tools that could be used for further studies.

In summary, there are many types of evidence used in engineering. However, common engineering approaches to tackling problems include taking a systems view of the problem and intervention; making sure design is centred on the end users (including consideration of inclusion and cost efficiency); and maximising the chances of success through proactive risk management. The use of safety cases is one exemplar of the pragmatic use of evidence in engineering, drawing on a diverse body of evidence to develop a coherent risk-based argument. These ways of working could hold key lessons for addressing the complex challenge of public health – not only in the approach itself, but also in facilitating close collaboration with experts from other fields.

Food policy

Professor Corinna Hawkes, City, University of London (Centre for Food Policy)

They are the questions we so often hear: what works to reduce childhood obesity? What can we do? While answers to these questions vary, to date they've largely been about offering up evidence of specific actions: a sugar tax, front-of-pack labelling, interventions in schools, banning fast food takeaways, teaching cooking skills.

Proponents of each of these approaches argue in their favour on the basis of the evidence they have. Yet even where positive impacts of these actions are shown, questions can be raised about what constitutes sufficient impact. If a sugar tax is associated with reformulation and lower consumption, that's good impact, right? Well, it's not enough for people who want to see 100% proof that obesity has been influenced.

To be fair, there has been an important shift in this dialogue. Innovations such as the 'systems mapping' in the government's much-cited Foresight report on obesity gave people the confidence to say: lots of things are needed to tilt the system against obesity; there is no single magic bullet, it's a complex system, and we have to be patient and not expect immediate impact on obesity. The trouble is that policymakers still need to make specific choices about what to do – and when

policymakers make proposals they are constantly confronted with the argument that there is inadequate evidence the proposed policies will work. So we are back to the beginning again – what works?

How can the discipline of food policy help?

Food policy is a young discipline. Part of what we do at the Centre for Food Policy at City, University of London – and part of my own preoccupation before I joined in 2016 – is to define that discipline. We take a progressive view. This means we see food policy as extending way beyond just one aspect of food (such as health or agriculture), encompassing all the policies that influence and shape the food system – and how and what people eat – from farm to fork. It means we place food system problems – obesity, malnutrition, poor livelihoods, exploited work, environmental damage and climate change – in the context of the interconnected systems that create them. For example, if we look at overconsumption, our systems reasoning helps us view it not just as a matter of individual people eating too many calories, but as a result of the way the whole system encourages overconsumption. This in turn has other impacts, such as climate change. And finally, it means we take an interdisciplinary approach.

What would constitute evidence in the food policy discipline?

For these reasons, a core aspect of gathering evidence in food policy involves asking and answering questions about how systems work: the food system, the policy system, and any system that affects people's relationship with food. This can illuminate many aspects of what effective obesity policy would look like. Let me illustrate with three examples of evidence that would lead us to come to a judgement about what policies to recommend.

The first type of evidence we seek is how the system influences the problem – and how the system is in turn influenced by efforts to address it. For example, once we start to study the system, we can see a disconnect between health and the way the food system currently operates. We can see that food supply chains are a marvel of efficiency that create economic value – but also that they respond to incentives to add value that are not related to health. For example, more economic value can be created from grains if they are highly processed for use as de-germinated flour, animal feed, sweeteners and oils used in refined, manufactured foods, rather than simply kept as wholegrain, which we know is better for health.

This is evidence of misalignment between economic and health goals. One cannot do a randomised control trial of conflicts between goals, but it has profound implications for how obesity is addressed. If economic success leads to obesity, our battle to reduce it will be all the greater. Thus, the solutions we recommend should also be about how the economics – or

any other relevant aspect – of the system can be changed. This in turn means we must gather evidence from the people in the food system who drive and respond to these economic incentives.

In the other direction, obesity policies have implications for the system. Front-of-pack nutrition labelling presents a very straightforward example: while the impacts on consumers are debated, one clear and consistent outcome is the way manufacturers in the system respond by improving the formulation of their products.

The second type of evidence we seek is how policies work. This involves understanding the mechanisms through which polices affect the system, including how people in the system respond to them. Let's take the case of action in schools on obesity – a good example of the need for different disciplinary views. A straightforward policy is to improve the nutritional quality of foods offered in schools. From a public health perspective, this alone would be a simple win to get children eating healthily. But if we add the behavioural psychology perspective, we may find that teenagers respond by eating more of the restricted foods at home or on the way to or from school, owing to learned habits and preferences. Others, however, will accept the new regime, and value it.

If we then factor in the sociological perspective, we might find teens rebelling against the restrictions by 'trading' banned foods to earn a form of status, and food service managers rebelling because they become worried that children are now eating too

little. All these things affect whether the policy will achieve its goal of advancing long-term improvements in the things people eat.

By taking an interdisciplinary approach to examining how policies work (and do not work), we can identify how to design them to be more effective, such as including measures to help young people to enjoy and value healthier food. Importantly, it also enables us to be more realistic about what we can expect their effects to be (necessary for the design of quality evaluations).

The third type of evidence we seek is about how people affected by the problem experience the system. We need evidence of how they experience the barriers and challenges to eating well, based on the realities of their lives. Take the example of food price policy. A lot of evidence indicates that people experience the food system though food prices: healthy food baskets are commonly too expensive for people to afford. This is often proposed as a primary reason for obesity among the poor – there's a plethora of evidence that people respond to pricing. A fully person-centred view of the system goes beyond that to identify other parts to the equation. Missing these would lead to policy being rendered less effective. We might learn, for instance, that people find 'welfare' – such as vouchers designed to make fruit and vegetables cheaper – stigmatising. We might learn that some people don't buy fruit and vegetables because of the time needed for preparation or fear that kids won't eat them explaining the attractiveness of the convenience of biscuits for breakfast. Seeking to understand people's lived experiences of a

problem could help deliver policies designed to address the full range of core causes, not just the ones for which the evidence is easier to gather.

Recommended mechanisms and tools

So what does this mean for the mechanisms and tools we would recommend to address child obesity? The first would be to take a very careful approach to designing policies that take into account the people of the system, and how they respond to policies. The second would be policy coherence and integration: putting governance mechanisms into place that ensure policies across sectors are all pointing in the right direction for obesity prevention. The third would be to take a person-centred approach to defining the challenges and solutions in the system, solutions that engage effectively with the communities most affected by the problem. These three approaches are not policies per se, but are ways of reasoning about and doing policy. It's not just what we do, it's how we do it.

City business

Nigel Jones, City Mental Health Alliance

Do people turn up to meetings? Do they commit to action? Do they meet those commitments? And do those actions, viewed objectively, make a difference?

Those are among the key questions I consider important in determining whether an initiative will have impact. The answers constitute evidence in the City of London business context. Although we have not yet sought to apply this approach to tackling childhood obesity, I believe it might add value also in that context.

As an example, the City Mental Health Alliance (CMHA) management team used the answers to these questions, among other criteria, to determine whether the initiative is worthwhile. We used these questions to see whether there is justification for the investment of time and money that we and our members have made in getting it off the ground, and sustaining and growing it over five years.

Our journey began with an informal chat between three individuals, all with busy, City-based day jobs and responsibilities for health and wellbeing in our respective organisations. All three organisations formed part of the food chain of City business – each was a provider and recipient of services. Based on initial discussions with their leaders, all recognised the importance of a healthy workforce; all blamed

businesses in other parts of the supply chain for the long-hours cultures they 'had to have', and the consequently higher risk of ill health among our people; and all were acutely aware of the stigma attached to mental ill health and the challenge it presented to changing the status quo.

So we decided to get a few more City business people around the table, supported by real experts in mental health from Mind and Mental Health First Aid England. We did not wait for any evidence other than the views of the senior leaders. There was no statistical analysis, no randomised controlled study. We launched CMHA based on conversations with senior people and the enthusiasm of a small group of people who believed things could and should be improved.

Our vision is a healthier work environment in the City. We aim to achieve this by reducing stigma, improving mental health literacy and identifying (and encouraging the implementation of) practical steps that City businesses can take to improve people's health – both mental and physical.

We do this in several ways. Firstly, by providing forums for senior leaders to interact on mental health-related topics. This is a key distinction between the CMHA and other business and mental health organisations and something which, in a recent consultation exercise with those leaders, they confirmed they still value. Secondly, by supporting senior City business people who want to share their stories of mental ill health (and how, in most cases, they have recovered and gone on to achieve even greater success). Thirdly, by collaborating on such initiatives

rather than competing, both among our members and with other like-minded organisations. And last but not least, by acting as the voice of the City on mental health.

Has it worked? Against the criteria set out above, yes – at least to some extent – although we recognise there is still much to be done. Chairs, chief executives and other City business leaders came to our initial meetings and have continued to turn up on a regular basis. They have committed to take action: to get mental health onto the company board agenda, to support the great work their HR teams are already doing, and to encourage their peers and colleagues (and themselves) to speak more openly about their own mental health challenges. They are taking action on all these fronts and more.

And these City business leaders (by renewing their membership and complimenting the work we are doing) and the outside world have said it has made a difference. For example, CMHA was identified in a *Lancet* article on 7 October 2016 as an example of how business can contribute to the creation of health rather than sickness – providing the objective view to which I referred at the outset.

Have we avoided requests from members' purse-string holders (their chief financial officers) for hard(er) evidence that they have obtained a good return on their investment? No. Do we recognise that more concrete evidence of what works and what doesn't would help? Yes. (Having been trained as a biochemist and worked as a lawyer for the last three decades, I recognise the value of evidence.) But have we allowed the lack of such hard evidence to be an excuse for inaction? No. We rely instead on our personal conviction that it is the right thing to do, reinforced

by regular feedback from our members and by positive, encouraging messages from independent people whose views we (and others) respect.

We have built an organisation on the back of the personal passion and commitment of a few individuals, with enthusiastic support from experts in the relevant field and seed funding from the three founder members, plus subsequent income from membership fees. We have benefited from volunteer support for management and administration, and from the societal shift we have all seen in recent years in relation to mental health.

Can this approach be used to help tackle childhood obesity? Experts in that field are obviously better placed than me to say. But from a layman's perspective, I believe they can – no doubt in combination with other conventional or innovative approaches.

Success clearly cannot be guaranteed. But what's the harm in giving it a go? What's the worst that can happen? And the best?

Urban design and planning

Louise Kielgast, Gehl Architects

Context: health and urban planning

Historically, many of the health problems that people in cities experienced were related to the standards of the built environment. Cities had poor sanitary conditions, and the lack of light and fresh air caused rampant disease and illness. While poor sanitary conditions continue in cities around the world, many current diseases and health problems – such as child obesity – are not related to the buildings themselves, but more to the ways streets and public spaces are designed and planned. The planning and design of cities have a great impact on aspects such as noise levels, pollution, sedentary behaviours, CO_2 emissions and so on. These, in turn, impact human health in negative ways.

This important relationship between the planning and design of the built environment and people's health conditions is widely recognised within our profession. But the health challenge is not the only important issue for urban planners and designers. Addressing health challenges is competing with many other agendas, such as economic development, city attractiveness, social sustainability, security and climate adaptation.

As practitioners in urban design and planning, our work at Gehl is centred around making better cities for people. It's through this people-centred approach we seek to demonstrate how making cities more liveable may also contribute towards more sustainable, attractive and healthy cities. This approach is based on decades of studies on human behaviour in cities – how people move about and choose to spend time in public spaces. From observing human behaviour, our experience is that safe and liveable urban environments are not about separating and segregating functions throughout the city. Rather, by mixing, integrating and gathering functions close to each other we see urban areas attract a wider range of age groups, including children – not least because people are generally attracted to the presence of other people. The possibility of watching and perhaps interacting with other people has proven to be a great attractor.

Obesity on the agenda in urban planning: inspiration from research

Child obesity as a specific health issue is to a large extent addressed through the lens of people's physical activity patterns, based on the knowledge produced in the health sector that physical inactivity constitutes one of the important determinants of obesity. This focus on physical activity features strongly in the field of urban design too, in terms of planning for people's mobility – whether in a car, by public transport, on foot or by bicycle.

Consequently, urban designers and planners rely heavily on research and data collected in the field of transportation, such as modal split numbers[2], but are equally influenced by public health research. For example, some research concludes that inactive lifestyles are increasing at an enormous rate in most parts of the world, not least among children. There are worrying examples of children spending up to 17 hours a week in front of a screen, compared to 8.8 hours playing outside.

The alarming global trends of sedentary lifestyles have, in recent years, resulted in more public health research on the possible effect of the built environment on physical activity and obesity. This research motivates the planning profession to promote urban environments that are more conducive to active mobility (walking and cycling). Furthermore, the following factors affect people's physical activity levels: sprawl (resulting in increasing motorised transport), population density, building density, density of public transport, mixture of land use and the presence of green areas, such as parks. Other more specific design aspects that have an influence on physical activity include pavements, streetlights and cul-de-sacs.

In addition to working with the physical dimensions of the built environment, urban designers and planners are inspired by the public health research which has demonstrated great health disparities and health inequalities in cities. Such research suggests that social factors are equally important to address if obesity rates are to be reduced. In the field of urban planning these insights have led to an increased focus on health equity.

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2   Modal split is the percentage of travellers using a particular type of transportation or the number of trips using said type.

Nature of actions in the field of urban design and planning

Based on the above insights, our profession understands that adequately addressing the challenge of child obesity requires working with planning at multiple scales (policy, strategic planning, zoning, masterplanning, and concrete street and public space design), as well as understanding the role of both the so-called 'hardware' (streets, squares, buildings) and 'software' (political leadership, campaigns etc).

In addition to these general planning principles, more and more planners work to address the challenge of health inequality. This means, for example, acknowledging that the most deprived urban areas generally also suffer from a lack of public spaces and local parks suited for and welcoming to children. Upgrading public spaces in these areas is likely to have a big impact in encouraging more people to spend time outside and for longer periods of time.

At Gehl, we conduct observational studies of how people make use of public space. We have gained important qualitative insights into what motivates people to walk, cycle and spend time in public spaces, thus making the argument for more people-centred planning principles. An example is the recurrent planning principle of 'density'. From a child's perspective, it is particularly relevant to plan for better proximity – proximity between home and school, proximity to potential friends, proximity to recreational areas (such as sports facilities and parks), proximity to local shopping. These are all things that will encourage more families, and thus children, to make more active mobility choices – thereby reducing the risk of obesity. These

types of insights are used in various planning stages, from input during visioning processes through to concrete design ideas and pilot projects.

Areas of intervention to address child obesity

Addressing child obesity within the field of urban planning implies action at many levels, as exemplified by the following intervention areas.

- **Play areas for social interaction close to home**
  Strong social ties have a positive impact on people's health and wellbeing, including physical activity and obesity. How can social interactions and ties be made possible from an early age? As time is a scarce resource in many families today, one intervention could be to make children less dependent on the presence of adults and create environments where they can move and play more freely close to home. This may include residential buildings with activated courtyards overseen by parents from inside, or traffic calming measures on the street, which allow children to go out and explore on their own as they get older.

- **Safe commuting routes**
  To design cities for children, we must also consider their commuting experience and what makes for a safe route. How are public spaces, crossings and speed policies integrated into certain routes? Safe roads affect how children use and play in the city – and can increase

how much they walk and cycle. This is illustrated in Copenhagen, where pavements are continued across side streets without interruptions in the paving, to give pedestrians priority. In addition, playful streets can impact the whole journey. By adding playful elements to the streetscape, walking and cycling in the city can become more inviting to children.

Conclusion: more quality based metrics in the planning of the built environment

While general urban planning principles such as density, connectivity and presence of green areas are likely to affect levels of physical activity, we at Gehl have learned that such quantitative measures cannot stand alone. They must be accompanied by qualitative measures that support people's needs and behaviours and take into account people's experiences of the public realm. This implies asking a different set of questions. Does population density really foster social interaction? Are the pavements in a good condition to walk on – including for children? What is the actual walking or cycling distance to get to the park? Is the park well maintained and pleasant to spend time in? By asking questions such as these, and acting on them, we can begin to achieve positive built environments as a catalyst for human health.

Sociological perspectives

Patricia Kingori, University of Oxford (Ethox Centre)

Julie Critchlow is not a name that immediately rings a bell for many people. But in 2006 she gained infamy as one of the parents who dared to defy celebrity chef Jamie Oliver and criticise his healthy school dinners campaign. Jamie Oliver initiated a programme in Doncaster to increase the quality of school dinners and decrease the waistlines of children usually served with Turkey Twizzlers and other such options for lunch. Meanwhile, Ms Critchlow was filmed smuggling pies, burgers, chips and fizzy sugar-laden drinks, all considered contraband by the chef, through the school gates. She accused him of starving her children and he branded her a 'big old scrubber'. She was also called 'the worst mum in Britain' by the national press.

Five years later, the *Daily Mirror* followed up on the Critchlows and reported that all the family, including the children, had been recently classified as clinically obese. Despite this diagnosis, Julie Critchlow insisted 'my kids are living proof that a good British diet – including chips, mash, sausages and bacon butties – helps them turn out just fine. They are happy, beautiful and have no serious health problems.'

Why are behavioural insights relevant?

Food, of course, is one of many contributory factors to childhood obesity. Other factors include physical exercise as well as attitudes and lifestyles initiated early in childhood. This school dinners story is useful in demonstrating not only how highly emotive the subject is, but also the enormous chasm between different interpretations of what counts as good food, what is healthy, whose opinions count and what constitutes a good parent. Clearly, food is tied to national identity, ideas of familiarity and of caring. However, if a reversal in childhood obesity statistics is to be achieved, interventions need to be predicated on gaining insights to understand these behaviours and ways of bridging the chasm of beliefs constructively. Such insights are essential.

A sociological perspective explores the phenomenon of increasing levels of childhood obesity by illuminating how it is interpreted across a range of different of social, economic, racial and cultural groups. Sociology invites us to make connections between individual behaviour (for example, a clinically obese child or parents who feeds their children high-fat foods) and their community and societal values and structures. For instance, contemporary British society places a premium on children being happy. For some parents the current public health message of a low-fat, high-fibre diet alongside regular exercise is incompatible with their socially informed idea of what it means to have a happy child. In turn, these notions of happiness as a child become ingrained in adults.

One way of applying a sociological perspective would be to gather insight into parents' views and perceptions of childhood obesity, and ask parents what they think are the main barriers to achieving both a happy and healthy child. This could then be compared and contrasted with the views of professionals working with children, in order to identify areas where interventions could be targeted most effectively and with the buy-in of these different groups.

How can a holistic approach help avoid stigma?

A sociological perspective on childhood obesity regards it as a socially constructed problem where food consumption is just one of many causal variables. Childhood obesity is a very sensitive subject. To classify a child as being obese can mean giving them and their parents (or carers) a stigmatising label. For these reasons, a sociological study of childhood obesity would have to be nested in a more holistic examination of childhood wellbeing. This would provide more comprehensive insight into factors that play a role in obese adults. Let's imagine how such a study would work.

Healthy and happy children: how to design a sociological study

A sociological study of childhood obesity would involve two different groups: parents and professionals. The first group would be made up of parents randomly selected from an area known to have high levels of childhood obesity – including

from a range of different social, economic, racial and cultural groups. The aim would be to focus not only on parents of children deemed obese, because, for reasons shown earlier, they might not recognise such a classification as reflecting their child's status (even if clinically established), and such negative labelling might be unhelpful. Rather, such a study would seek to identify factors that might contribute to children becoming obese as adults by looking at attitudes and practices related to children's health and happiness in general.

Gathering the perspectives of parents

Parents would be surveyed to explore why some children (in general) might become obese adults, aiming to capture their views on food, nutrition and exercise.

Through a focus group, parents' understanding and beliefs would be explored in more depth. Factors which they consider important in creating happy and healthy children would be listed and ranked, with those relating to health and nutrition drawn out. Parents might be asked to discuss why they think that their area has been classified as having high rates of childhood obesity, and what they perceive as challenges to children not being obese.

Parents could be asked to discuss a range of foods and activities that are deemed healthy to gain insights into what they consider are the barriers to children having access to them in their area. Finally, they would be asked to list their ideas for solutions to issues related to childhood obesity. These factors could then be ranked in order of importance, to capture what is considered the most achievable in creating happy and healthy children.

Gathering the professional perspective

The second study group would be made up of a random selection of health and youth professionals (including GPs, teachers, youth workers and sports coaches) from the same area – and again from a range of different social, economic, racial and cultural groups. These professionals would be surveyed in the same way as the parents, and would participate in a focus group based on the same types of questions.

Sharing views

Taking the results from each of the exercises and sharing them with the other group will help identify priorities for action. The professionals would be able to gain insights from parents to identify areas of similarities with their own conclusions, and help decide where potential interventions might be targeted. The parents' views on any interventions proposed by the professionals would be crucial in understanding how to implement them successfully.

Benefits of the sociological approach

The results of a study like this could form the basis of further work to track changes in social norms, perceptions of barriers and ideas around childhood obesity. However, most importantly, such a study would provide insights into different views which would then become important evidence in understanding why health promotion messages are often not aligned with lay ideas about what makes a happy and healthy

child. This evidence could then inform interventions aimed at addressing the barriers to healthy lives identified by parents and professionals alike.

Public management

Toby Lowe and Max French, Newcastle University Business School

Complex health problems such as childhood obesity confound traditional 'scientific' models of evidence-based policy because the dynamics of complex systems – and not single factors or agents – determine their causation. Recent public health scholarship has argued for the use of complexity-consistent research methods that respond to this conceptual shift to better inform public policy. In this essay we go further, arguing that tackling complexity requires evidence to be created and used, not just in public policy, but throughout the ongoing management of public services and interventions. We present a model of evidence within public management that reflects this view through the dynamic creation and use of evidence by practitioners in social learning systems.

Evidence, public management and obesity

Evidence currently informs public management practice in two ways. Firstly, alongside the rise of evidence-based policy, public management has positioned itself as a discipline of implementation, or evidence-based public management (EBPM). This has involved using metric-based performance

management, audit and inspection mechanisms to enforce fidelity to a pre-conceived 'best practice', itself assumed to be informed by a reliable body of scientific evidence.

The UK government's 10-year obesity action plan adopts this model by attempting to regulate the behaviour of public agencies according to best practice. For instance, public bodies are encouraged to adopt Government Buying Standards for food and catering services, while schools are invited to adopt the updated School Food Standards and deliver at least 30 minutes of physical activity for every pupil each day. Public service delivery is considered just once within the strategy, as a commitment to skill up health care professionals to discuss nutrition and bodyweight with families. Even here, however, the intention is to make sure central evidence-based standards are more closely followed.

EBPM fails in the myriad of areas of public and social policy where unambiguous 'scientific' evidence is not available and best practice is uncertain. The response within public management has been to adopt forms of outcomes-based public management (OBPM) – including payment by results schemes in commissioning, league table approaches among providers, or results-based accountability in service management. Here, performance incentives are tied to the production of evidence of impact on predefined metrics. For example, the use of payment by results methods in commissioning within the NHS has been expanding since the 2003 NHS Plan, covering 30% of the NHS budget in 2012, and more recently expanding to mental health and community services commissioning.

OBPM differs from EBPM by focusing on the creation of evidence, rather than its utilisation. It is important to note, however, that both approaches adopt the same standards of evidence as traditional evidence-based policy and evidence-based medicine. Both routinely call for 'objective' scientific methods like randomised control trials and other experimental methods, while diminishing the validity of personal experience, in-depth qualitative methods, and contextualised evidence.

Dealing with complexity through public management

What both EBPM and OBPM ignore is that all societal outcomes – including public health problems like obesity – are not created by individual policies or service interventions, but emerge through the dynamic and unpredictable interaction of biological factors, personal decision making, multiple service agency interventions, and broader social determinants. Public health outcomes are therefore complex on several grounds:

- **causally**, since they emerge through ensembles of interacting mechanisms across multiple nested systems

- **dynamically**, since changes in individual, cultural, economic, or technological factors co-evolve dynamically and unpredictably

- **experientially**, since individual conditions, preferences and local contexts can vary significantly from person to person.

Policies and interventions must therefore respond to enormous variations between individuals and local contexts, which themselves change unpredictably over time. Yet the model of evidence that underpins and validates EBPM and OBPM is intrinsically at odds with such a world view. The experimental and statistical methods prized within scientific evidence 'hierarchies' infer causation from aggregated correlations between variables, and in the process strip away the complexity of lived experience and the contexts with which policies interact to shape outcomes. Experiential knowledge and qualitative insight meanwhile – seen as subjective and unreliable in a scientific model of evidence – become essential in making policies relevant to the varied and rapidly changing contexts into which they are deployed.

Meaningfully addressing complexity requires approaches that adopt a new complexity-friendly public management paradigm. This operates by:

- increasing the capacity of local actors to adapt to achieve an agreed purpose

- creating the space for local actors to develop bespoke interventions, based on a deep understanding of client needs and local context

- creating learning environments for local actors to create and use evidence contextually, and inform judgements within a broader system

- ensuring this system is healthy – there is a shared purpose, the necessary actors are sufficiently connected, and trusting relationships exist to encourage the sharing of errors and reflective practice.

In recent years, public management practice has demonstrated ways of engaging meaningfully with this paradigm. In public health, quality improvement initiatives have put local actors in charge not just of implementing evidence, but of creating and sharing it. In social care, personal outcomes approaches like Cook and Miller's *Talking Points* respond to the variation in causal pathways to effective care by negotiating roles between providers and users in pursuing shared outcomes. In the field of community nursing, the Buurtzorg approach has used small self-managing nursing teams, freed from narrow performance targets, to respond quickly to fast-changing individual needs of their service users, with promising results. Such arrangements bear conceptual similarity to what Bawden describes as 'critical social learning systems' – boundary-spanning networks of practitioners committed to open reflection on practice.

The meaning of evidence within a complexity-informed public management

The approach of social learning systems upturns the traditional evidence hierarchy. It makes experiential evidence – and not just objective 'scientific' evidence – essential to informing effective service responses. This recalls Michael Lipsky's conception of 'street-level bureaucrats'. However, beyond

merely re-interpreting evidence-based policy, front-line practitioners become essential in creating locally effective policy by negotiating the balance of scientific and experiential evidence. Since causation in the context of health outcomes cannot be fully understood in the aggregate, the significance of this role in creating and deploying evidence becomes critical in the management of complexity.

Calls have been made in public health for a 'real' evidence-based medicine that responds to the lives of service users. While having merit, such ambitions cannot be achieved by treating complex health outcomes like childhood obesity as matters for resolution through policy change alone. The causal, dynamic and experiential complexity of health outcomes can only be resolved by engaging those involved in public management in the creation of locally appropriate evidence. However, this involves a new model of evidence within public management itself, to move beyond the scientific objectivism of both EBPM and OBPM, towards the negotiation of scientific and experiential evidence within social learning systems.

Design

Brendan McGetrick, independent author, designer and curator

The designer positions the headset over my eyes and the room disappears. She places plugs in my ears. The sound of her voice, clear just seconds before, becomes distorted and distant. The noises surrounding us – people talking, children screaming, phones ringing – meld into an undifferentiated roar. I feel disoriented and vulnerable. Frankly, I feel afraid. I'm about to comment on this when the designer asks me to open my mouth. She inserts an oddly shaped lollipop. The taste isn't bad, but the shape stretches my mouth and restrains my tongue. I try to speak, but can only grunt. The roar in my ears is relentless. My eyes see only blurred silhouettes surrounded by uncomfortably bright colours. I feel trapped. After a few seconds, I remove the headset.

When my vision returns I see the designer. She wears the nervous smile of someone who knows she's subjected you to something uncomfortable, but for a good cause. The designer's name is Heeju Kim, a graduate of the Royal College of Art in London. I've been trying out her graduate project, called Empathy Bridge for Autism, which is a set of tools that disturb the senses. The tools expose the user to the hypersensitive sensory environments in which autistic people live – its aim is to increase understanding and, eventually, inspire new forms of treatment.

I discovered Heeju's Empathy Bridge for Autism while organising the Global Grad Show, an international exhibition of graduate design and technology projects that I curate each year. Heeju's was just one of more than 100 works in the show, which all shared a common spirit of creativity. That spirit – empathy combined with imagination and technical rigour – informs the best design. As a curator, my job is to capture that spirit and communicate it to the public, many of whom are unfamiliar with, and sometimes openly dismissive of, the value of design.

What is curating and how does it relate to child obesity?

There are many kinds of curating – online and offline – but I focus on the most traditional form: namely creating exhibitions in galleries, museums and conferences. Global Grad Show is one such annual exhibition, and provides a useful illustration of how a curator marshals evidence and cultivates an atmosphere of curiosity around a given subject.

Global Grad Show features inventions from the world's leading design and technology schools. The 2017 edition comprised 200 projects drawn from 92 universities in 43 countries.

All the projects exemplify evidence-based design. This can be illustrated through the development of a product called MoonPads – a system of interactive smart-mats developed by a multidisciplinary group of US-based engineers, industrial designers and business strategists at the Rochester Institute of

Technology (RIT) in collaboration with the Al Sigl Community of Agencies (a US network of organisations that provides services to people with special needs).

Like many research-based designs, the MoonPads system was developed in three phases: discovery, concept development and user testing.

During the discovery phase, two RIT designers observed daily activities at a children's centre that supports young people with autism, Down's syndrome and cerebral palsy. They then defined a project brief: to design an affordable, flexible system for guiding distracted or overstimulated children in daily activities. In the concept development phase, the team created and tested prototypes, developing a system of interactive mats constructed from soft silicone. The mats use lights, sounds and vibrations to engage and direct children through activity-based therapy sessions. With this working prototype, the project then entered the user testing phase. During this testing phase, new uses are often discovered – for instance, sets of MoonPads were sent to a hearing and speech centre and were found to show great potential as an aid to help children develop motor and cognitive skills.

How does evidence inform design?

Successful designers rely on a unique combination of rigidity and flexibility that allows them to consistently and almost obsessively attempt to refine their work, while also remaining

receptive to outside input. The design and curation process is inherently able to absorb contradictory evidence. We see failure as provisional and instructive. Once a design is in the public domain, the opportunities for inventing new applications radically expand. Although originally inspired by autism, the playful, movement-based approach of MoonPads makes the system relevant to obesity and many other public health challenges.

At the Global Grad Show, I witnessed a group of schoolchildren invent a game using these soft silicone MoonPads. The product had been designed to be controlled by an app, which wasn't working as there was no wifi connection. However, the children discovered through vigorous trial and error that if they applied enough pressure to these MoonPads they could produce sound and light without using the app. The children then spread out the MoonPads on the floor and jumped on them to synchronise the sounds into a simple melody, thus transforming the intended use of the product. One of the designers was stood next to me in the tent, and she looked positively euphoric at the transformation that had just taken place.

How do design curators approach public health challenges?

Design curators are uniquely qualified to contribute to conversations around complex issues in need of fresh thinking, such as childhood obesity. As a profession, we aspire to create experiences that stimulate innovation and challenge mindsets. When we design and curate, we try to help people by intriguing them and then inspiring them.

In the case of child obesity, I would start by scouring the world for ideas, products and prototypes that provide a new perspective on factors influencing obesity. This process would be entirely open – gathering raw material with as many inputs as possible. Next, I would establish a set of criteria by which to assess the material. In the case of an exhibition related to public health, these could be:

- **originality of the idea** – projects that introduce a product, service or experience that is not currently available elsewhere.

- **social impact** – projects designed to directly benefit social, medical or environmental causes.

- **international relevance** – projects that can have an impact beyond the specific context for which they were created.

- **feasibility** – projects that can be produced in a straightforward and affordable manner.

This assessment would be made by a panel of judges representing the assorted partners necessary to take a project from a prototype into the public domain. Each of these experts would be asked to apply critical pressure to the works according to his or her area of expertise. Each potential exhibit would be rated on a scale of one to five, with the highest scoring projects selected for the show.

Once an exhibition's content is selected, the challenge for the curator is how to communicate it – through text, graphics and atmosphere to cultivate an environment of curiosity, in which visitors feel interested and empowered. This is achieved

most effectively by emphasising what a work does, rather than simply what it is. Heeju's Empathy Bridge for Autism did this to devastating effect, and the experience changed my perception of autism forever.

This visceral, revelatory audience experience is the curator's ultimate goal. The best exhibitions change lives. They fascinate and frighten and motivate. They provide an open stage on which to demonstrate that issues like childhood obesity arise because of multiple factors – and require solutions from unconventional sources. Designers can offer more than products, concepts and experiences that address childhood obesity – they can also provide the research-driven, user-focused methods that create them.

History

Dr Alex Mold, London School of Hygiene & Tropical Medicine (Centre for History in Public Health)

At first glance, the discipline of history seems easy to understand. History is an accumulation of facts about the past: historians collect various kinds of evidence (documents, images, objects, oral testimonies etc) to tell us what happened. This simplistic view of history as a discipline is pervasive, but it is wrong.

History is not just about what happened, but also about considering why something happened. Assessing a range of sources, making a judgement about their reliability and then blending these together into a convincing interpretation of the past is a skilled endeavour. Moreover, perhaps surprisingly, history can offer powerful insight into the present by demonstrating what did and did not work in the past, and why.

How do we understand childhood obesity?

Taking a historical approach offers two valuable insights into how we understand childhood obesity.

Firstly, history helps us determine the extent to which this is a new problem, and if it is new, what it is about our times that has made obesity more prevalent. On the one hand, there have always been 'fat' children (and adults). On the other hand, the rapid growth of rates of obesity and overweight among children over the last 30 or 40 years suggests that this is indeed a novel problem – at least in terms of scale.

Secondly, history shows us how the concept of obesity has changed over time. This highlights the constructed nature of such concepts and how these are not just a factual description of the problem, but a reflection of the way it is framed. The label 'obese' has a history, as do the factors thought to be responsible for excess weight. At different times, excess weight in children has been varyingly understood as healthy, as a condition caused by faulty glands, or as a social problem. And today it is seen increasingly as the result of an obesogenic environment.

History demonstrates that context matters. What we think about an issue and how we respond to it is determined by a whole host of issues that are peculiar to the time we live in.

Solutions and evidence: lessons from the past

Just a few years ago, an editorial in a leading medical journal criticised historians for what it described as our reluctance to engage with issues of the day. Not only are such suggestions unfounded, but they also misunderstand the value of history in dealing with contemporary problems. It is true that many

historians are more comfortable with policy analysis than policy prescription. However, historical analysis allows us to critique past approaches, which can then inform future interventions.

Since at least the 19th century, public health policy and practice have been underpinned by a desire to act for collective wellbeing. Such good intentions can blind public health practitioners to the limits of their capacity to effect change and the potentially negative impact of their activities. Taking the long view highlights three potential downsides of public health action, which could be avoided by adopting a historian's approach to childhood obesity.

1.   Public health policies and practices have often been imposed on the most disadvantaged in society from above.

In the early part of the 20th century, British public health doctors were keen to inculcate practices of hygiene and good motherhood among the poorer members of the populace. Such action, however, was as much about middle-class morality as it was about combatting disease. More recently, what has been called 'lay epidemiology' demonstrates that when health education messages do not align with people's lived experiences they either ignore them, or interpret them to suit their own pre-existing views.

These examples (and many others) would suggest that policies designed to help deal with childhood obesity should work with families and individuals to reflect their lived experiences. This would not only make policies more likely to succeed, but also avoid replicating and reinforcing existing patterns of inequality that might be contributing to the problem.

2. Public health policies and practices can make an issue, or elements of it, worse, not better.

This is often the case when individual behaviour is thought to be a cause of disease, or important for its transmission. In some circumstances, there is a tendency to blame the victim: to hold individuals responsible for their health status rather than address the broader social, environmental and economic factors that underpin it. This can be observed in certain types of health education. Shocking images and the explicit use of fear tactics may have an impact, but this can backfire. In 1980s Britain some of the early AIDS education campaigns increased the stigma attached to the condition. The scare tactics effectively turned people with HIV into potential threats to public health at the same time as reinforcing existing prejudices. This resulted in more discrimination against individuals with the virus and the groups then associated with it, such as gay men and intravenous drug users. Similar arguments are now being made about anti-obesity campaigns: mobilising negative emotions leads to more discrimination, and strengthens negative perceptions of the obese.

We should, therefore, be careful in the use of tactics and images within health education campaigns and avoid policies and practices that will increase stigma, discrimination and victim-blaming. Instead, we need to take wider context into account when thinking about how to approach childhood obesity.

3.   Complex problems are often presented as if they have simple solutions.

Although we may now be approaching a degree of academic consensus that childhood obesity is a complex problem that requires a multifaceted and multidisciplinary approach, the political and public discourse around obesity often persists in searching for a single solution. But this is not peculiar to childhood obesity. Illegal drug use is another complex challenge for which simple solutions are often put forward. Prohibitionists argue that we need to crack down on drugs and the people that sell and use them. For legalisers, drug problems will disappear if the legal barriers that surround them are taken away. Yet history tells a rather different tale. The prohibition of alcohol in the United States during the 1920s and 1930s is often cited as a failure because of the increase in organised crime connected to the sale and distribution of illicit alcohol. More nuanced historical research, however, has demonstrated that by some measures prohibition could be considered a success: the incidence of alcohol-related health conditions, for instance, declined in this period.

The success or failure of a policy very much depends on both the intended outcome and the point in time at which it is judged. A historical perspective demonstrates that any attempt to deal with complex problems like childhood obesity is likely to produce unintended effects and that these may take many years to be fully understood.

Conclusion

Setting childhood obesity in historical context helps us identify continuity and change in social policies and concepts over time. This applies not just to obesity itself, but to the long-running challenges that persist within public health policy and practice. To develop a realistic approach to dealing with issues like childhood obesity, it is vital to work with the people affected, avoid victim-blaming and recognise that complex problems do not have simple solutions.

The historian's use of various types of evidence – and our attention to change over time, place and the ways in which problems are framed – enables us to see the bigger picture. Historical examples demonstrate how the wider context helps shape a problem and the response to it. Understanding this can help us avoid common pitfalls and design more effective and equitable policies in the future.

Social psychology

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Social psychologists are interested in the psychological processes that link the social and the psychological. The discipline is eclectic in its approach to data collection, employing both qualitative and quantitative methods. Respected evidence in social psychology is that which is collected from human subjects, and a strong study design is longitudinal – one that tracks people across time to document enduring and sustained changes in behaviour.

Sometimes psychologists use an experimental or quasi-experimental approach, comparing those who have experienced a particular activity with those who have not. Such experiments allow psychologists to comment on factors that might cause phenomena such as obesity. Yet some real-world factors cannot be tested through experiments. For example, we cannot randomly assign children into groups where only one group is breastfed. And because breastfeeding preferences can co-vary with existing group memberships (such as socio-economic class, ethnicity or family history), a quasi-experimental approach creates further challenges. Social psychologists, however, think these social and cultural groups are important: rather than 'control for them', we explore their role and effects.

The role of context in social psychology

The social psychological approach sees people as rational actors responding to their context and cultures. Social psychologists are interested in the nature and causes of individual behaviour and how it is determined by social situations and social contexts. We are interested in situation-specific social effects on behaviour (such as situational effects on children's eating of sweet treats) and in how social and cultural contexts (my sense as a woman of the cultural appropriateness of breastfeeding, for example) – referred to as group processes – impact on health and social behaviour.

For these reasons, evidence is accumulated by assessing people's group memberships and their ideas about related social identities, and how these memberships act to support or undermine measures of health and wellbeing. Regarding health, a large body of evidence shows that cultural context and group processes influence individual psychology and, through this, behaviour and action across a range of dimensions in adults and children. These include snacking, food preferences, interest in exercise and sport, norms around BMI, blood pressure and cognitive function. Social psychologists are also examining how, as group members, individuals understand and position representations and concerns about obesity, as well as associated health messaging and efforts to change diet and exercise behaviour.

The social identity approach to health

One important approach to understanding child obesity in social psychology is known as the social identity approach to health. A key assumption is that group memberships, and the associated identities they confer, are intrinsically linked to health. As a rough rule of thumb, if you don't belong to any groups but then join one, you cut your risk of dying in half during the next year. And though we increasingly appreciate that group memberships can be a 'social cure', the idea that we can use groups to support health is new.

To understand the phenomenon of child obesity, this approach moves away from the operationalisation and management of individual-level behaviour related to weight, exercise and diet. Habits such as diet and exercise can be seen as everyday enactments of group memberships. Furthermore, habits that are enactments of important and valued group memberships are those that are most likely to be resistant to change. So, if eating crisps and drinking beer are linked to group membership, they will be enabled regardless of their individual level, health-damaging implications. In this way group memberships (eg Londoners, northerners) can be more important in shaping our health behaviour than any personal attribute.

The social curse and the group norm

In the past, some groups have been seen as damaging to both social cohesion and individual health. Thus, some social identities may be 'a social curse'. In relation to obesity, this social curse can be seen in research relating to people's understanding

of a healthy BMI. Studies from the US, for example, have shown that the idea of 'normal weight' varies across socio-economic class groups and can be very different to standard medical and health definitions. These studies show that norms around weight spread through particular social networks, in part because of a shared understanding among those groups of what normal weight represents. Initiatives that aim to get people to a healthy or normal weight therefore need to be defined using the norms of the social groups they are targeting. Encouraging people to be thinner than this group norm is likely to be resisted and may even be seen as nonsensical advice from elites disconnected from the reality of ordinary people's lives.

The importance of belonging

Membership of groups and their associated identities also give us a sense of belonging and are a salve against loneliness. Recently an approach known as Groups 4 Health has been trialled to support those affected by mental health problems and substance misuse. This intervention directly targets distress associated with loneliness and social isolation by offering skills and confidence for people to increase their social connectedness through membership of a group – namely a Groups 4 Health intervention group. The active ingredient for the therapy that drives improvements in mental health appears to be the subjective sense of belonging that is associated with feeling part of a group. So this approach sees groups as a potential medium for altering behaviour, and offering support and advice to change health habits.

It is interesting to note colleagues in rehabilitation sciences have for many years noted the value of group-based approaches to physiotherapy, for example. Rehab and exercise programmes are more likely to be sustained when group connections are facilitated beyond the lifetime of the intervention. While we have accumulated evidence using qualitative methods to suggest the value of this approach, large-scale longitudinal evidence of its value remains limited. Based on this knowledge, a social identity approach to health might suggest that we could address child obesity by harnessing groups in support of health.

Exercise initiatives that emphasise participation and the benefits of belonging, at the expense of performance and competition, are likely to have wide-reaching benefits for tackling childhood obesity. These interventions need to be attentive to gender, ethnic and socio-economic class sensitivities and must work with valued group memberships to design activities that can be embedded and sustained by groups themselves. Cookery groups have similar potential. These groups would have to work with ethno-religious identity-based norms around food, while also developing acceptable and positive norms around meal preparation. Again, the nutritional skills covered would have to be sensitive to the concerns and practices of different social and ethnic groups – effectively working with existing group allegiances.

Responding to group needs

In all these groups, it is essential that the skills offered respond to perceived concerns and demands of the group, rather than focusing on a public health concern about child obesity.

The latter can be variously interpreted as pathologising women, the poor or minority ethnic groups. And cookery or habitual practices to support health need to emerge from the knowledge and expertise within these groups, rather than be perceived as offered by those outside the group. Examples abound of well-intentioned exercise and dietary advice being poorly received by the target group because of the perceived position of the adviser.

In conclusion, individualised understanding of health and human behaviour has reduced the visibility and importance of the role of social groups in determining health. Group membership and identity are powerful determinants of behaviour. Harnessing existing groups or creating new groups in support of health is a potentially important avenue for tackling child obesity.

Sociology: a political economy approach

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Sociologists look to social structures to explain why people hold certain values and live particular kinds of lives. While acknowledging people have individual preferences, our theoretical tools predispose us to consider how institutions and conventions, alongside family and friendship networks, constrain and enable various forms of social action. Sociologists seek to understand how the interplay of different social relations between groups and individuals influences life outcomes (often focusing on the vulnerable or socially excluded). Sociology is not dominated by a single theoretical paradigm nor a set of methodological tools. But it does pay particular attention to how social outcomes differ (on average) across genders, classes and ethnicities with an eye to explaining the social inequalities it uncovers.

How does sociology affect policy?

Sociological thinking has had a profound influence on policymaking in the UK. Peter Townsend and colleagues 'rediscovered' poverty in the 1950s and 1960s by arguing

that living standards are relative to society: societal norms and cultural expectations shape what it means to be poor. Townsend's work was crucial to the expansion of social security under Harold Wilson's Labour government. Townsend also served on the original committee for the Black report, which analysed health inequalities since the Second World War.

In a different vein, Anthony Giddens' description of third way politics – rejecting both socialism and neo-liberalism – grew out of research examining how economic changes at the end of the 20th century affected society's norms and values. These ideas are not central to the discipline of sociology, but they are quintessentially sociological. They attempt to understand social life through an examination of social structures and institutions.

Such an approach can shed light on various social issues and is especially well-suited to examining the problem of childhood obesity. Children's physical activity and dietary practices are almost never entirely their own choosing. Such practices do not emerge from reasoned decisions regarding children's own preferences. Instead, they are shaped by a series of layered social structures that can include family characteristics (such as parental education and values), educational institutions (schools and peers, for example) and the built environment (including green space). These social structures are, in turn, shaped by society's institutions and policies.

This layered concept of social action suggests the problem of childhood obesity is produced by a particular political economy – the way political, economic and social systems are assembled within society. Contemporary UK society is merely one specific configuration of these systems. Childhood obesity

is therefore not only about choices and preferences. It is also connected to regulations pertaining to food production (such as the traffic light system for supermarket labelling), construction of housing (with areas for play and exercise) and content of school curricula. But these institutions and structures also affect behavioural practices of children through shaping cultures of symbolic value. These cultures communicate what types of social action are praiseworthy, normal and good – and, thereby, shape cultural attitudes towards the consumption of food, such as by suggesting that sugary sweets are a childhood treat or that consuming alcohol as a teenager is forbidden and dangerous. The smoking ban, for example, did not merely change the legal rules regarding where and when people can smoke, it also changed the social rules, further shifting our cultural values and norms.

How do sociologists perceive the limitations of RCTs?

This type of sociological lens also informs how we interpret certain kinds of evidence. Randomised controlled trials (RCTs) have become especially ubiquitous in policymaking because of the evidence they produce. Sociologists, however, tend to be sceptical that RCTs can tell us much about how to solve problems like childhood obesity for three reasons.

First, interventions studied using RCTs often assume that social action is an output that responds directly to factors such as food costs or information. Sociologists believe this view of the self is

ill-suited to addressing problems like childhood obesity because it can overlook the structural, habitual and symbolic aspects of behaviour.

Second, the results of RCTs often can't be generalised. Many sociologists expect an inverse relationship between effectiveness and generalisability, because to be effective an intervention would need to engage with contextual particularities; and, in so doing, may diminish the effectiveness of the same intervention applied elsewhere.

Third, there is a more fundamental problem with RCTs: they dramatically narrow the types of questions that researchers can effectively ask and answer. RCTs by their nature tend to intervene at the individual level because our statistical tools require large samples, and interventions presume malleability. Randomly assigning communities to an intervention is much harder and more expensive than randomly assigning individuals. In seeking to satisfy the demands of the RCT design, we inevitably drift towards individualistic 'treatments' rather than focusing on structural factors that may be more important. It is quite simply very difficult to examine or address the political economy of obesity using RCTs.

What is the value of natural experiments?

Of course, sociologists recognise the value of randomisation in generating convincing evidence. So they have increasingly relied on natural experiment designs to provide causal answers to sociologically interesting questions. Natural experiments

occur when some change in the social world randomly assigns – or approximates random assignment – to an intervention and control group. They allow us to study phenomena that are often outside the control of researchers. They also have the advantage of being firmly situated in the real world, thereby more accurately reflecting how social interventions are implemented in practice.

Natural experiments have generated important insights into the political economy of obesity and gesture towards possible solutions for Britain. The introduction of a soda tax in Mexico created a natural experiment and is being examined to see whether such a policy may reduce obesity. Mexicans consumed fewer sugar-sweetened beverages and more water after the tax was introduced, suggesting a similar policy in the form of the sugar tax might work in the UK too. Another natural experiment study in Indianapolis found that building recreation areas reduced the average weight of children in those communities. Creating freely available spaces for physical activity in UK neighbourhoods where childhood obesity is highest may likewise reduce obesity over both the short and long term. Natural experiment methods have also been used to highlight how trade agreements (between the US and Canada, and between Vietnam and the World Trade Organization) may affect diets, potentially increasing obesity.

Which interventions and approaches do sociologists prefer?

When sociologists use RCTs they strongly favour interventions that reflect more complex aspects of the social and cultural context of behaviour. There is some indication that interventions that do so are more successful. For example, Football Fans in Training, developed by the University of Glasgow, targeted men's obesity at football clubs in the Scottish Premier League. This intervention found entry points to a particularly disadvantaged community through close engagement with the social relationships of this group, working with (rather than against) those factors shaping social action. Developing contextually sensitive interventions requires the kinds of qualitative or ethnographic research that are so central to sociology and anthropology. These methods will be essential if we are to understand what would work well for children.

In summary, sociologists would focus on social structures and social conventions in tackling childhood obesity, but we would explore these structures through careful quantitative analysis and detailed qualitative work to illuminate how people understand their experience. In the short term, sociologists might address the problem of childhood obesity by introducing taxes on unhealthy goods and investing in sociologically informed RCTs. In the medium term, they would prioritise addressing the political economy of obesity through adopting carefully designed trade deals, regulating food production and expanding the availability of green space.

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