The contribution of behavioural science to addressing the social and wider determinants of health

Evidence review

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# Contents

Acknowledgements  iv  
Abstract  v  
Executive summary  v  
Key arguments  v  
Context and background  vi  
Siloed research and evidence  vi  
Individual versus social approach  vii  
Perspective of affected people and their participation  vii  
Complexity and oversimplification  vii  
Social practice and systems relational approaches  viii  
Local context and appropriate application of the behavioural sciences  viii  
Incremental change over time  ix  
Introduction  1  
Background  2  
Method for the review of the evidence  4  
Inclusion criteria  4  
Exclusion criteria  4  
Findings  5  
Analysis and discussion  14  
Knowing what to do and how to do it  15  
Using knowledge from outside the peer-reviewed literature  16  
Getting past the cognitive biases  17  
Actions and consequences  18  
The language of individualism  19  
Going beyond the individual  20  
Illustrative case-studies  22  
  Tobacco control: where broad evidence, both behavioural and social/wider determinants, coalesced  22  
  HIV prevention and control: where evidence from communities was used highly effectively  23  
  COVID-19 response in the United Kingdom: where broad evidence was not used  23  
  Obesity and dietary behaviours: where a social practice approach should improve outcomes  26  
Conclusion  28  
References  29
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Abstract

This report discusses the differences and similarities between two approaches to health equity and inequalities: individually oriented behaviour change, and the social or wider determinants of health. Health inequalities in early mortality and patterns of illness within and between countries remain a major problem and are a significant global social injustice, despite the extensive literature and scientific evidence from both approaches proposing various interventions. This report is based on a review of reviews of the behavioural interventions literature and the wider determinants literature, and a narrative review of other relevant materials. The report makes the case for scientific consilience between the differing approaches and outlines the practical implications of such a consilience. Case-studies on tobacco control, HIV prevention and control, the response to COVID-19 in the United Kingdom, and obesity are used to illustrate examples of consilience and non-consilience, use of evidence from outside the peer-reviewed literature, and how consilience might work in practice. Our review found that consilience is well developed in tobacco control and HIV prevention and control, but much less so in the other areas.

Executive summary

Key arguments

1. There is a compelling and substantial body of evidence linking the social and economic conditions in which people live and work to patterns of human health, showing that disadvantaged conditions are strongly associated with patterns of poor population and individual health.
2. There is existing and extensive evidence about health-related behaviour change. Some of this evidence focuses on individual-level behavioural risk factors associated with poor and disadvantaged populations, as well as individual health outcomes.
3. There needs to be consilience between the different bodies of evidence. This consilience must include individually-focused behavioural research and evidence about the social determinants of health, along with evidence from emerging strands of research in microbiology, sociology, political science and organizational sciences, as well as learning from community asset-based approaches to health improvement. Consilience can form the basis for effectively alleviating the burden of ill health on poor and disadvantaged people.
Context and background

4. Globally, the epidemic of non-communicable diseases (NCDs) linked to smoking, alcohol consumption, obesity and lack of physical activity shows little sign of plateauing, let alone reversing.

5. Population patterns of health and disease, including NCDs, are strongly associated with the social or wider determinants of health such as poverty, unemployment, sub-standard housing, and poor physical and material environments.

6. There is evidence about the mechanisms linking poor social conditions and disease via stress and inflammatory pathways. There is also evidence about the mechanisms related to the exercise of power over resources and how this affects material exposures and inflammatory pathways for disadvantaged groups.

7. Tobacco control, a major public health success in reducing the global burden of disease, has been multi-layered, multi-pronged and multi-fronted, involving economic, industrial and fiscal policy, education, regulations, legal and statutory changes, as well as behaviour change.

8. Tobacco control drew upon heterogeneous evidence from psychology, economics, sociology, history, political science, public relations, marketing, business management, ethics and international relations, as well as epidemiological evidence about the health risks associated with tobacco use.

9. When the HIV/AIDS epidemic emerged, and before treatments were available, successful prevention strategies were developed using knowledge derived from the communities where HIV incidence and prevalence were highest.

10. In respect to diseases linked to food and alcohol consumption and lack of exercise, the great majority of effort has focused on various aspects of individual-level behaviour change, drawing heavily on the discipline of psychology and directed to reflective and conscious cognitive processes, and has mostly been about providing information, advice, education and warnings.

Siloed research and evidence

11. Broadly, there are two distinct relevant literatures within the behavioural and social sciences: one dealing with social determinants, and one dealing with individual behaviours and lifestyles. The distinction is in their focus on the upstream or downstream actions, rather than in their methods or underlying philosophical assumptions. The wider determinants literature, for the most part, appears to be disconnected from the individual behavioural literature, and vice versa.

a. In the literature about upstream action on the social determinants and on behavioural risk factors, little material deals explicitly with causes or mechanisms. Most reported data are associational.

b. Much of the research on smoking, alcohol, diet or physical activity is conducted – and reviewed – in silos, and the complex interactions between multiple behaviours receives relatively little attention, even though this is vitally important because behaviours do not occur in isolation from one another.

c. The impact of interventions, and their differential effectiveness across the social gradient, receives little attention.
d. There is limited evidence that action on the social determinants of health empowers individuals to be able to choose healthy behaviours that will prevent ill health and improve long-term health.
e. For the most part, the literature on behavioural interventions is not engaged with the question of health equity as such, or the wider determinants as determinants of health.

12. There is a need to address the biases that prevent the coming together of the social determinants approach and the individual behaviour approach.

**Individual versus social approach**

13. A key assumption in much policy is that the individual human agent is the obvious target for action.
14. If the focus is solely on individuals, then we overlook the fundamentally social nature of the patterning of disease and the very many levers for action beyond individual behaviour. The social practice approach, combined with behaviour change, has been highly effective in tobacco control in some high-income countries. A similar joint approach has, for the most part, not been applied to the other so-called lifestyle-related diseases.

**Perspective of affected people and their participation**

15. Effective social change must take account of the points of view of ordinary people and the knowledge they themselves have of their own circumstances, behaviours and needs.
16. There is sometimes a disjunction between the political narrative of the global injustice of health inequalities and the needs and preoccupations of the people who have to bear the consequences of inequalities. The people who are most negatively impacted by health inequalities are not necessarily activated by the injustices – they want help with the challenges they face in everyday life.

**Complexity and oversimplification**

17. Biologically, psychologically, cognitively and socially, humans are not best understood in terms of variables that may be isolated and described in simple linear or causal relationships with other single variables, at single moments in time. Humans have multiple dynamic and continuous relationships with other people, with the physical and material environment, with their own biology and with their subjective understandings of these things.
18. Class, gender, ethnicity, disability and sexuality are about relationships between individuals and groups and, very importantly, all these relationships are about power and access to and control of resources.
19. To conceive of social class or socioeconomic status (SES), gender and ethnicity as characteristics of individuals reducible to variables inhibits acknowledging the relational dynamics and processes involved in the generation of health inequalities.
20. There is enormous potential for the behavioural sciences to provide an increased contribution to addressing health inequalities. However, this is not to be derived only from the conventional literature on either the social determinants or the individual-level interventions.
Social practice and systems relational approaches

21. Much conventional wisdom about public health successes of the past remains locked in a causal narrative, which assumes that knowing the cause – whether it is a social determinant or a behaviour – tells us what to do and how to do it.

22. It is important to distinguish between necessary conditions affecting health (aetiology, proximal risk factors, effectiveness and cost-effectiveness) and sufficient conditions (the lived experiences and knowledge of communities, the experience of practitioners and commissioners working in the field).

23. For the behavioural and social sciences to provide an increased contribution to the social and wider determinants of health, we need to apply a holistic, dynamic and synthetic understanding of health to add to the armoury of factors and variables that are well known in the field of health-related behaviour change.

24. A social practice approach that does not focus exclusively on individual behaviour nor exclusively on structural determinants, but instead sees them as inextricably bound together, can offer a way forward. In this way of thinking, the inextricability of the individual and society is the starting point. Society is not background or context: it is part of what individuals think, say and do. There have been relatively few attempts to apply a social practice approach empirically; however, it offers many opportunities for consilience.

25. Systems mapping is a proven approach to integrate the individual behaviour and structural determinants perspectives and if the map incorporates the dynamism of what is involved, then it can serve as a logic model for action.

Local context and appropriate application of the behavioural sciences

26. There is substantial evidence and guidance about what to do to improve the health of the public; however, information on how to do it effectively at the local level is not available in a well-populated and readily available evidence base.

27. Understanding any given behaviour in its natural setting is much more likely to reveal the change needed in that specific environment to inhibit or encourage action. In other words, we need to study behaviours in context, as well as the myriad of ways they link to each other and to other aspects of life.

28. This understanding provides insight and evidence about how to create population-level changes locally: how to implement policies that benefit all segments of the population (shifting the inequalities gradient), and how to implement policies in ways that recognize how interventions are experienced (and resisted) by different communities, while recognizing the social and cultural granularity of communities and neighbourhoods.

29. It is important that research and its scientific methods do not inhibit innovation. It is important for research to orient towards how to bring about change within communities, and not only to describe the problem. Researchers and policy-makers must work together to innovate and evaluate policy and interventions to strengthen the local evidence base.
30. The factors affecting uptake of, access to and differential effectiveness of programmes and interventions, as well as the social practices that generate individual and population risk, are primarily social, cultural, historical and geographical in origin. They are also highly localized and, in general, locally-based teams are in a much better place to nuance and adjust interventions to suit local circumstances.

**Incremental change over time**

31. What people do is deeply culturally engrained. Human activities are sedimented in culture over centuries and across generations, and therefore amenable to change at the margins and incrementally rather than rapidly. There are no quick or simple fixes.
Introduction

The Behavioural Insights Unit of the World Health Organization (WHO) in Geneva, Switzerland, commissioned this report. It describes the findings of an interrogation of systematic reviews and other evidence, the aim of which is to understand:

- How the behavioural sciences, broadly defined, have contributed to addressing the social and wider determinants of health, and how they could do this in future;
- The similarities and differences in the approaches taken by public health teams focused on addressing the social and wider determinants of health and by behavioural scientists working in public health.

These aims generated seven research questions.

1. To what extent does action on the social determinants of health empower individuals to be able to choose healthy behaviours that will prevent ill health and improve long-term health?
2. To what extent have behavioural interventions equitably enabled individuals to adopt healthy behaviours by tackling the social and wider determinants of health?
3. To what extent have behavioural frameworks been used to improve understanding of the social and wider determinants of health?
4. Is there potential for the behavioural sciences to provide an increased contribution to the social and wider determinants of health, and to what extent?
5. Are there areas of work within the social and wider determinants of health for which behavioural science approaches, frameworks and tools are inappropriate?
6. To what extent are the methods used for behavioural sciences and the social and wider determinants of health similar or distinct?
7. Are there aspects of conflict between the concepts/perspectives of behavioural sciences and the social and wider determinants of health?

The authors of this report interrogated the evidence published in systematic and other reviews of empirical investigations of interventions about social determinants and health-related behaviour and behaviour change to determine whether, and to what extent, the literature sheds light on these questions. In addition, materials drawn from literature not necessarily to be found in the review-level evidence have been used, including non-interventional research, correlational and associational data, theoretical writing (philosophical and sociological), aetiological research and evidence linking biological and social processes. Some of this material would be routinely excluded from many systematic reviews because its focus is not on specific interventions and the methods applied do not align easily with the standard procedures and search techniques used in most systematic reviews. This limitation has been previously noted by the National Institute for Health and Care Excellence (NICE) of the United Kingdom of Great Britain and Northern Ireland, for example, when methods were developed to appraise public health evidence and public health guidelines (NICE, 2010; Kelly & Moore, 2012; Kelly, 2018a). However, the full breadth of material is important and should be taken into account.
The relationship between social, economic and political phenomena and patterns of individual and population health has been well known and well documented since the middle of the nineteenth century (Gairdner, 1862). Poverty, unemployment, poor nutrition, bad housing, inadequate sanitation and a lack of access to clean water are associated with poor health – and with greater morbidity and early death (WHO, 2008). The consequence is a patterning of inequalities in health, which closely tracks other forms of inequality (Graham, 2009; Bambra et al., 2010; Bambra, 2012, 2016; Bartley, 2017).

In high-income societies the associations form a gradient, which means that as social and economic factors improve for different groups of the population, on average, so too does the health of individuals. The shape of the gradient varies between socioeconomic groups and is steeper in some groups and societies than in others (Kelly & Doohan, 2012). However, the general pattern is ubiquitous within and across societies (Banks et al., 2006). In low-income societies the associations are linked to mass deprivation, but gradients are also observed (Bonnefoy et al., 2007).

In 2008, the results of the WHO Commission on Social Determinants of Health were published (WHO, 2008). At the time, it was the most comprehensive global overview of evidence to be assembled about health inequalities and their social determinants. The findings of the Commission were unequivocal. Social determinants, broadly defined, exert a profound effect on population health, to the detriment of socially and economically disadvantaged people. This holds true in whatever way disadvantage or health are measured. The report made clear that structural changes in economic, occupational, gender, ethnic, power, political, cultural and social systems would be necessary to change the shape of the inequalities gradient. Structural determinants affected health through exposures, vulnerability and behaviours. The Commission was particularly emphatic about the importance of thinking inter-generationally and paying special attention to children, their health, the health of expectant and nursing mothers, and the importance of educational provision. It is important to emphasize that the direction of the Commission’s findings and recommendations for policy were clear: it was towards structural and system-level change, and the concomitant benefits to the health of whole populations. The target was not individuals, nor individual behaviour change. The Commission’s theory of change was that individual behaviour change would occur following structural changes.

Until the COVID-19 pandemic, much of the attention paid to inequalities in health in high-income countries had focused on a relatively well-defined group of non-communicable diseases (NCDs), largely taking a siloed approach to individual disorders. The reason for this was that in Western Europe, North America, Australia and New Zealand, for example, the diseases driving the mortality and morbidity of those dying younger were coronary heart disease, cardiovascular disease, obesity-related conditions, some cancers, alcohol-related diseases, conditions associated with lack of exercise and, above all, smoking-related diseases. This patterning was also being tracked in low- and middle-income countries (Beaglehole & Bonita 2008; Beaglehole et al., 2012).
Faced with the epidemic of NCDs, the response worldwide has been to focus on the aetiology of these conditions, and especially the behaviours implicated in aetiology.

The findings that had earlier linked smoking to lung cancer and subsequently to other diseases (Doll & Hill, 1950, 1952, 1964) signalled the way for the study of other risk factors involved in the aetiology of these NCDs, which were linked to human behaviours – smoking, eating, alcohol consumption and lack of physical activity (Dawber & Kannel, 1966; Sytkowski & D’Agostino, 1996). It has been widely acknowledged that these behavioural factors co-exist with social conditions and cluster together with disadvantage (Buck & Frosini, 2012).

However, the main lesson drawn from the considerable amount of epidemiological data on these risk factors was taken to point to individual human behaviour as the most tractable point of entry for interventions (McMichael, 1999). The aetiology of causation had elided into a theory of intervention, which in turn has given rise to a search for intervention effectiveness and evidence thereof. This focus on risky behaviour is highly intuitive (Kelly & Barker, 2016). As a consequence, notwithstanding the arguments about structural matters in the WHO report of the Commission on Social Determinants of Health (WHO, 2008), the thrust of much policy-making and intervention has been towards the individual: specifically, individual behaviour change and single disease outcomes, reducing proximal risks rather than addressing the social/wider determinants, and often focused on the most or more disadvantaged groups in society (McMichael, 1999).

Most of the scientific efforts with regards to diet, alcohol consumption and exercise have focused on various aspects of individual-level behaviour change (NICE, 2007, 2014). The literature draws heavily on psychology and has been predominantly directed to reflective and conscious systems of the human mind until recent years (Strack & Deutch, 2004; Marteau, Hollands & Fletcher, 2012; Marteau, Hollands & Kelly, 2015). As such, interventions have mostly consisted of providing information, advice, education and warnings in an attempt to get people to change their behaviours. There is a substantial amount of data on what and how such interventions work and, perhaps most tellingly, the degree to which these efforts can be confidently predicted to bring about change or not (NICE, 2007).

In recent years, some important research has been done to disassemble the mechanisms involved, to more precisely articulate the theories being used (sometimes in unacknowledged ways), and to provide compendia as to the optimal approach to use in specific contexts with particular populations, and with specific components of behaviour and action (Michie et al., 2013, 2014, 2016, 2017). Therefore, we know a great deal and, at the same time, know much about the limits of these approaches.
Method for the review of the evidence

A search was devised and run in three databases: Medline via Ovid, CINAHL via EBSCO, and PsycINFO via EBSCO. There were four parts to the search: social determinants of health; public health issues; behavioural science; and systematic reviews. The social determinants of health search terms were taken from Prady et al. (2018) and include search terms concerning residence characteristics, employment, cultural deprivation, educational status, social stigma and health status disparities, all combined with OR. The public health terms focused on alcohol consumption, physical activity, smoking, physical activity and obesity, all combined with OR. Behaviour change terms included diffusion of innovation, goal theory, motivation, culture change, nudge and behavioural economics terms, all combined with OR. The four parts were ultimately combined with AND. The methodology limit searched by keyword, subject headings and publication type for systematic reviews. Free-text terms and appropriate subject headings were included for each part of the strategy. There were no publication date limits nor initial language limits, although in the final dataset, papers not in English were excluded from the analysis. The full search strategy is available as Annex 1. The inclusion and exclusion criteria used for the subsequent screening of the papers are given below.

Inclusion criteria

- A systematic review
- Focuses on public health interventions
- Interventions must target behaviours and/or social determinants of health.

Exclusion criteria

- Not a systematic review
- Does not review interventions (e.g., prevalence studies)
- Interventions do not target behaviours and/or social determinants of health
- Interventions relate to health care services (i.e., treatments) rather than to public health improvement (e.g., changing care for people who have had a stroke).

A test set of references (n = 50) were screened by six reviewers in the team (AA, RA, AB, JB, BC, NE), plus the lead author (MK). Decisions on this test set were used as a learning process and for clarification of inclusion criteria. The total search results (N = 1367) were divided into three sets (n = 454) in Rayyan for screening (https://rayyan.ai/). Reviewers were split into pairs, each with one more and one less experienced researcher. References were title/abstract screened blind. Once double-blind screening was completed, the blinding was removed, and disagreements were resolved within each pair. If an agreement could not be reached, MK made the final decision. Commonly agreed ‘includes’ were pooled together in Endnote and had full text articles sourced for full text screening and data extraction. The full list of included papers (n = 229) is provided in Annex 2.
Findings

1. To what extent does action on the social determinants of health empower individuals to be able to choose healthy behaviours that will prevent ill health and improve long-term health?

In the 229 papers interrogated for this exercise, there were 33 that explicitly majored on upstream action on the social determinants of health. The subject matter was heterogeneous. It included government actions, policies and strategies, mass and community-based campaigns, physical activity infrastructure, mass and social media, education campaigns, taxation, economic incentives, communities, schools and workplaces. Specific examples are changes to the physical environment or infrastructure (e.g., Hunter et al., 2015; de Almeida et al., 2018; Kelly et al., 2020; Bel-Serratt et al., 2022), governmental measures to reduce sugar consumption (Moynihan & Miller, 2020), fiscal policy (Thow et al., 2010), food availability and pricing (McKay & Godrich, 2021; Epstein et al., 2012), financial incentives of various kinds (Martin, Suhrcke & Ogilvie, 2012), and broad government policies (Ball et al., 2015). Some reviews were comprehensive, focusing on some or all of socioeconomic status (SES), gender, ethnicity, age, disability and education as determinants. Reported relationships were mostly associational; there was little in the material that dealt explicitly with causes or mechanisms.

Sometimes the social factors were treated as mediators, sometimes as determinants. The associations that were identified were between various upstream actions and sometimes singular behavioural outcomes (such as physical activity), or sometimes broader sets of health behaviours (e.g., physical activity, diet and alcohol consumption). Drawing a hard and fast line between upstream and downstream factors in these papers is not straightforward; there were crossovers in some of the reviews, and some of the papers that focused on individual behaviour also brought in factors which could be construed as social determinants. In practical terms, classifying something (for example, changing a microenvironment as a consequence of government policy) is both upstream and downstream, with outcomes at individual and population levels.

Much of the research is conducted – and reviewed – in silos, related to smoking or diet or physical activity, while the complex interactions between multiple behaviours receives relatively little attention – even though this is vitally important (see illustrative case-studies, below). Because of the focus of some of the reported research on particular disadvantaged groups (homeless people and specific ethnic minorities, for example), the impact of interventions and their differential effectiveness across the social gradient as a whole receives little focus. Risk factors are taken as a given, and their aetiological role is taken as the starting point. The fact that these risk factors are embedded in history, epigenetics and local industrial patterns of employment, for example, is given little prominence. The majority of the evidence reviewed originates in developed countries and thus addresses the risk profiles for NCDs in these societies. The evidence base is not sufficiently global. Therefore, there is an inherent bias in the literature. Our findings need to be read with that in mind.
The evidence found in the reviews we examined – that action on the social determinants of health empowers individuals to be able to choose healthy behaviours that will prevent ill health and improve long-term health – is not extensive. While it is fair to say that there is an underlying, although often unstated, assumption that this body of scholarship will in turn empower individuals, the way this might take place is not articulated in much detail in the review-level material.

The broader literature (i.e., that not found in our search of databases), which includes epidemiological material and more theoretical writings, plots the associations between the social determinants and health outcomes (e.g., Ziglio et al., 2002; Braveman, 2003, 2006, 2010; Kestilä et al., 2005; Irwin et al., 2006; Marmot & Wilkinson, 2006; Starfield, 2006, 2007; Cockerham, 2007; Espelt et al., 2008; Krieger, 2008, 2011, 2012; McDowell, 2008; Marmot & Friel, 2008; Putnam & Galea, 2008; Satcher & Higginbotham, 2008; Wilkinson & Pickett, 2009; Harris et al., 2020). These provide frameworks for understanding the ways in which behaviour or lifestyle might interact with the social determinants of health. One of the foci has been the ways in which proximal risk factors, which are behavioural, cluster with social determinants and with poor health outcomes (Buck & Frosini, 2012). Some commentators shift attention upstream to the causes of the causes, or to the determinants of the proximal risk factors (Marmot & Wilkinson, 2006; Marmot & Allen, 2014). In any event, the associations and correlations are well known and empirically not in doubt.

The discussion of the mechanisms underlying these associations is less developed, although in recent years a stream of research linking social conditions, stress, inflammation and some disease outcomes has been profitably pursued (e.g., Albus, 2010; Fagundes et al., 2011; Hughes et al., 2015; Eisenberger et al., 2017; Bilal, Auchincloss & Diez-Roux, 2018; Mengelkoch & Hill, 2020; Muscatell et al., 2020; Diamond, Dehlin & Alley, 2021).

Some authorities have pointed to the fact that the most important interventions that will reduce health inequalities by empowering individuals are those which require little or no conscious effort, from a behavioural point of view, among the population. This finds expression in nudge theory, behavioural insights and behavioural economics (Thaler & Sunstein, 2008; Marteau et al., 2011). A well-known example of this is the fluoridation of water. For many years, there has also been a strand of research that has considered the way in which taxation may act to facilitate population-wide health improvement, and this has driven some approaches to tobacco control and, to a lesser extent, alcohol control. The central argument is that universal actions like fluoridation and taxes require minimal agentic action from the point of view of community members. Raising taxes on sugary drinks has been an important recent case-study (Adams et al., 2016). The importance of this idea is based on the premise that human agency is itself constrained by social factors, and the most disadvantaged have fewer resources to easily expedite individual agency. The idea then is that interventions requiring low agency will support the more disadvantaged.

The argument sometimes goes still further: population-wide interventions requiring little agentic effort on the part of individuals are most likely to be effective and least likely to exacerbate inequalities (Capewell & Graham,
Individually targeted (rather than population-wide) interventions have differential effects in the population and may often worsen inequalities.

This leads to two further questions. First, how do the social and behavioural factors interact? And second, what literature is available to provide evidence for that interaction?

The empirical evidence in the systematic and other reviews interrogated for this project is thin on these questions. The literature posits a theory that action on the social determinants may produce empowering effects. This is in practice a programme theory (cf. Pawson & Tilley, 1997) – i.e., it is an assumption about what ought to or should happen, rather than an empirical account about the mechanisms of what actually happens. To be clear, our interrogation of the systematic and other review-level literature shows an absence of evidence on the extent to which action on the social determinants of health empowers individuals to be able to choose healthy behaviours or prevent ill health and improve long-term health. It is not necessarily an absence of effect, but there is an absence of evidence in the review-level literature to determine and identify what actually happens.

It is important to note that within the social determinants approach, it has long been argued that the most effective way to deal with the injustices manifesting as health inequalities are through policy levers that are not directly about health or health policy at all, i.e., policies for reducing poverty or improving education (especially education for young women in low and middle-income countries), as well as improvements in housing and food. Several generations ago, McKeown (1976) made this point with respect to health improvement in the United Kingdom by demonstrating that improved nutrition, as well as better housing and sanitation, had had greater beneficial effects on population health than improvements in health services.

The searching and screening processes used in this report identified little literature on wider government policies, although many of the other materials we considered do bring these factors into play. The paucity perhaps reflects the trends to which the nature of funded research is itself subject across time. A number of scientific questions remain to be investigated and developed in respect to the social and wider determinants of health. Health services do have important benefits on population health and population health improvement is not just a matter of nutrition and infrastructures (Bunker, 2001). Yet, what is the relative contribution of prevention strategies, health services and clinical medicine to different population groups and to more or less disadvantaged people, at different points in time and at different levels of societal economic development? And how do the mechanisms linking these factors and outcomes together actually work? Much of what we know in this field is based on associational data, some of which has been around since the middle of the nineteenth century. The weight of this evidence strongly suggests that this is a real relationship and not an artefact or a chance observation. The relationship between the social and the biological, which is at the heart of these associations, is an area that is ripe for future scientific investigation. Epigenetics, metabolomics and studies of inflammation linked to social conditions already provide a significant body of evidence, which is suggestive
of various pathways and mechanisms. One important point to make in this regard is that, in order to understand and address the mechanisms behind the associations between biology and sociology, synthetic thinking as well as analytic thinking will be required. The analytic work will involve exploring the many biological and microbiological elements involved, and details of social structures and human interactions. However, bringing these elements together synthetically – the biological and physical/material worlds as well as the social world, and our cognitive and subjective understanding of them – will be a complex process. However, this is a complexity we will need to deal with if we are to fully understand the extent to which action on the social determinants of health empowers individuals to be able to choose healthy behaviours.

2. To what extent have behavioural interventions equitably enabled individuals to adopt healthy behaviours by tackling the social and wider determinants of health?

This second question is in two parts: do behavioural interventions enable individuals to adopt healthy behaviours equitably, and do such interventions tackle the social and wider determinants of health?

The literature dealing with behavioural interventions is plentiful, and the majority of the reviews identified in the search relate to behaviour in various ways. Some of the reported research contains references to factors such as SES, income, education, gender and age, but this is by no means consistent or comprehensive across behavioural research. The social factors are mostly used to describe baseline data, as moderators of effects, to test for confounding, or to describe barriers to effective outcomes; for the most part, they are treated as variables representing characteristics of individuals, not as dynamic or relational features of populations. Disadvantaged groups are sometimes the focus of the research, such as Native Americans (Pedersen et al., 2021) or people experiencing homelessness (Vijayaraaghavan et al., 2020).

There is a broad range of number and types of interventions, settings, target groups and target behaviours. There is a good deal in the literature relating to a wide array of digital and web-based interventions (e.g., Antwi et al., 2012; DiFilippo et al., 2015; Mathews et al., 2016; Griffiths et al., 2018; Hsu et al., 2018; Western et al., 2021). Some of the reported research is place-based, such as in schools (Cawley et al., 2011; Wang & Stewart, 2013; Mears & Jago, 2016; Podnar et al., 2021), workplaces (Boelsen-Robinson et al., 2015; Gea Cabrera, 2021), primary care (Faruqi et al., 2015) and communities (Walton-Moss et al., 2014; Abeykoon, Engelr-Stringer & Muhajarine, 2017; Hartmann-Boyce et al., 2018). Target populations include nursing and expectant mothers (Chamberlain et al., 2013; Notley et al., 2019), older people (Baert et al., 2011), disadvantaged groups defined in various ways (e.g., intellectual disabilities, ethnicity, SES, or lesbian, gay, bisexual and transgender; see Smedslund et al., 2008; Michie, Jochelson & Markham, 2009; Liu et al., 2010, 2013; Brandstetter et al., 2015; Berger & Moorey-Somers, 2017; Willems et al., 2017; Pastor & Tur, 2020).

The reported outcomes being targeted by interventions include diet (Thomson & Ravia, 2011; Hendrie et al., 2017; Burchett et al., 2018), weight management and obesity (Burgess, Hassmen & Pumpa, 2017; Burchett et al., 2018; Balhareth, 2019; Birch et al., 2022), smoking (Sussman, Sun & Dent,
2006; Murray et al., 2009; West et al., 2015; Smith et al., 2019), alcohol misuse (Kelly, Magill & Stout, 2009; Brown et al., 2016) and physical activity (Tang et al., 2019; Tamayo, Dobbs & Pincu, 2020; Heise et al., 2021). It is notable that physical activity is treated across the literature either as an outcome (i.e., having beneficial effects), as a protective factor, or as an intervention, for example, in obesity prevention (Martin et al., 2018).

Actions reported include interventions on food labelling (Feteira-Santos et al., 2019; Benajiba et al., 2020), nudge activities and choice architecture (Haff et al., 2015; Al-Khudairy et al., 2017; Harbers et al., 2020), education (Perez-Escamilla et al., 2008), health literacy (Smith et al., 2021), mass media (Graziosé et al., 2018), motivational interviewing (Borrelli, Tooley & Scott-Sheldon, 2015) and peer-led work (McHale et al., 2022). Some of the reported evidence is about general and/or multiple risky behaviours (Ashton et al., 2014; Bull et al., 2014; King et al., 2015; Uthman et al., 2015). Some reviews report differential outcomes in different social groups (Beauchamp et al., 2014; Moore et al., 2015) and some consider underlying behavioural theory (Hardeman et al., 2000).

The results of the interventions within the groups and settings and on the target behaviours are variable. Behaviours do change in some circumstances and in response to varying types of interventions (NICE, 2007, 2013). However, identifying the most appropriate interventions for a specific population and behaviour, and the ways in which policy- and other decision-makers could helpfully use these interventions, is rare. An understanding of the detailed specifics requires a different approach of the kind, for example, that the Human Behaviour-Change Project at University College London (UCL) is developing (Michie et al., 2017).

Importantly, the intervention literature as described in the reviews is not really engaged with the issues of health inequalities, as such, or the wider determinants as determinants of health. Social factors are used (as noted above) to test for confounding or to describe baseline data, as far as they are used at all. Neither does the literature consider questions of differential effectiveness in any systematic or consistent manner, nor in a way that could be usefully harnessed for tackling inequalities in health.

3. To what extent have behavioural frameworks been used to improve understanding of the social and wider determinants of health?

Here the review-level literature is particularly thin. There are several discussions in the broader literature, however, which seek to bring behavioural and social and wider determinants of health together; and important as these contributions are, the ideas have not been taken up empirically – at least in the review-level literature interrogated. Some reviews have sought to link behaviour to dimensions of social difference. However, the social and wider determinants literature for the most part appears to be disconnected from behavioural frameworks and vice versa in the empirical studies reported in the reviews. In the body of literature we reviewed, behavioural frameworks were mostly used to inform the development of interventions being tested. There is attention given to behaviour change models or public health behavioural theory, but not in connection to the social and wider determinants of health.
4. Is there potential for the behavioural sciences to provide an increased contribution to the social and wider determinants of health, and to what extent?

The evidence found in our interrogation of the review-level literature does not provide a clear answer to this question. However, the broader social science literature, which is invisible in the systematic reviews we interrogated, most certainly does.

The behavioural and social sciences reveal the repetitive and recursive nature of life — the patterns of human conduct that repeat themselves and may be observed in the present, and over generations (Giddens, 1979, 1984; Bourdieu, 1990, 2000). In epigenetics and metabolomics, the links between the recursivity of social life and biological outcomes have been explored (Radford, 2018). The social sciences themselves also show how human life is continuously dynamic and changing. Human life is not randomly chaotic. It is in a continual process of flux, but also has certain predictable qualities. It is dynamic and processual (Stones, 2005). The broad social science disciplines tap into this as their subject matter.

Much public health research fails to grasp this dynamism. First, much of the effort in research terms goes into cross-sectional data collection. Information is gathered about phenomena at particular points in time. These data can then be used for comparisons with similar data points in the past and subsequently. But in reality, the data are like still frames in cine film — they are snapshots of moments in time, and we have to infer what is going on between the various time points. Second, the data that are collected at these points in time are treated as variables that may be then linked to other variables. Associations between variables is the paradigmatic way of unravelling the data (Kriznik et al., 2018).

Although cross-sectional approaches are important (and are the bedrock of much of what we know about health inequalities, proximal risk factors and health outcomes), they are only ever a part of the story. Biologically, psychologically, cognitively and socially, the phenomena that the variables describe are not in reality isolated nor in simple linear/causal relationships with other single variables at single moments in time. They are in multiple dynamic and continuous relationships with other phenomena. In addition to the armoury of factors and variables that are well known in the field of health-related behaviour change, we need to apply a holistic, dynamic and synthetic understanding of health to address the social and wider determinants.

Health inequalities are not just “there” working their malign influence, and neither are social determinants merely distant factors affecting people’s lives in mysterious unknowable ways. The main phenomena, which are the determinants, are all relational. Class, gender, ethnicity, disability and sexuality are about relationships between individuals and groups, as well as the intersections and interactions between the various dimensions of social difference. Importantly, all of these relationships are about power and resources. Groups and individuals are unequal in term of their access to resources, ability to influence others, and facility to make and construct their own life-worlds in ways of their own choosing. These are not abstract
concepts: they are real things and social facts which are real in their consequences, and that reality plays out in economic, political and social processes. If we simply think of class and occupation (usually truncated to SES) or gender and ethnicity as characteristics of individuals reducible to variables, and not as relationships, our ability to understand the dynamics of the processes involved will be forever out of reach. The converse is that to think dynamically and holistically would enable the behavioural sciences to provide an increased contribution to the social and wider determinants of health. In other words, it is important to think of the intersections between the dimensions of social differences and their interactions, and not to conceptualize the phenomena in static and separate ways.

5. **Are there areas of work within the social and wider determinants of health for which behavioural science approaches, frameworks and tools are inappropriate?**

There is a lack of evidence in the review-level literature to answer this question. However, it could not be argued that social determinants are unamenable to analysis, using concepts from the behavioural and social sciences. This is because behaviour – what people do, say and think – cannot be separated from the social, biological and physical world in which it takes place, other than in an analytic way or in a highly controlled laboratory situation.

Real life is not like that. People’s actions, and the social structures in which they live, are never truly independent of one another and are instead always intrinsic to each other. We therefore argue that even though it may not always be explicit, a social determinants approach – changing policy, or environments, and so on – always has behavioural consequences, and behaviour always has effects back on policy and environments. Therefore, empirical and theoretical possibilities for consilience do exist.

A social practice approach, which does not focus exclusively on individual behaviour nor exclusively on structural determinants, but instead sees them as inextricably bound together, offers a way forward (Shove, Pantzar & Watson, 2012, Blue et al., 2016, 2021). In this way of thinking – and it is a way of thinking as much as anything else – the inextricability of the individual and society is the starting point. Society is not background or context: it is part of what individuals think, say and do. There have been relatively few attempts to do this empirically in relation to the issues of concern in this report. The writers who have however applied this approach have done so with reference to several different phenomena, including: physical education (Fitzpatrick, 2011); lifestyle (Dumas, Robitaille & Jette, 2014); physical activity and exercise (McLaren, Rock & McElgunn, 2012; Nettleton & Green, 2014; Bunn et al., 2016; Wiltshire, Lee & Williams, 2018); food and eating (Delormier, Frohlich & Potvin, 2009; Chan, Deave & Greenhalgh, 2010; Lindsay, 2010; de Morais Sato et al., 2018); smoking (Blue et al., 2016); alcohol consumption (Supski, Lindsay & Tanner, 2016; Meier, Warde & Holmes, 2018); the use of self-monitoring devices (Williams et al., 2018); weight management (Jauho, Mäkelä & Niva, 2016); gambling (Gordon & Reith, 2019); and cross cutting issues related to embodiment, class and gender (Warin et al., 2008; Robinovich et al., 2018).
This theoretical and empirical material provides the basis for a middle ground between the individualistic behavioural approach and the social determinants approach. The groundwork for coalescence and consilience has already begun. The argument is not that individualistic behavioural approaches cannot be applied. On the contrary, the extensive evidence on individual behaviour change interventions provides a very important resource. However, the way that the resource is used will be critical.

The behavioural literature and the wider determinants literature both operate in terms of cause-and-effect relationships between actions or interventions and outcomes. In the behavioural literature, this conventionally takes the form of hypothesizing that by doing X intervention (for example, messaging about the dangers of alcohol misuse) it will produce Y outcomes (in terms of the behaviour of drinking less alcohol). In taking a practice approach – the middle ground referred to in the previous paragraph – alcohol consumption is conceptualized as an activity among many other activities and phenomena. These activities or practices are the product of people’s ability to enact them and the infrastructures that facilitate the activity. In the case of alcohol, these would include production and manufacture, the delivery chain, retail and advertising, and price and availability. The activity of drinking alcohol is also dependent on the meanings attached to the practice – or more precisely, the many different practices that constitute drinking alcohol. Amid all of this, the behavioural evidence about, for example, interventions involving information about the possible risks attached to consumption, will be a part, but only one part, of the mix. To understand what is going on requires us not to start with the assumption that the behavioural interventions – messaging about risk – will be the best means of predicting changes in individual behaviour. The messaging is but a part of the bigger picture, although the evidence about it helps to explain one part of the dynamics involved. The evidence about messaging provides a rich resource for helping to grasp that component of the complexity. Alone, it does not provide the complete answer. It is not the basis for prediction of outcomes. These reside in a much broader set of interweaving and interacting complexities.

6. **To what extent are the methods used for behavioural sciences and the social and wider determinants of health similar or distinct?**

It is easy to identify the differences between the behavioural and the wider determinants approaches. One focuses on the individual while the other focuses on the population or society as the principal unit of analysis. Consequently, the methods used differ. The social determinants approach draws on epidemiology, associational and correlational evidence linking broad social, economic and political factors to disease outcomes, risk and rates of morbidity and mortality. The behavioural approach draws heavily on psychological methods including experimental and social psychology. The disciplinary bases are distinct. Consequently, the nature of the evidence that each uses as grounds for explanation and argument vary.

However, there are also some important similarities. In general terms, neither the methods nor the underlying ideas about causation in both individualistic behavioural work and the social/wider determinants are very different. Both focus on the idea that outcomes are the consequence of
Individuals and the social and wider determinants of health are inseparable. The scientific solution lies in finding more effective ways of working with that inseparability, and using dynamic, holistic and processual ways of conceptualizing and acting on the problem.

7. Are there aspects of conflict between the concepts/perspectives of behavioural sciences and the social and wider determinants of health?

There are many possible conflicts between the behavioural science perspective and the social and wider determinants of health perspective. In policy and scientific terms, these differences have less traction than one might imagine based on the demarcations that can be drawn. In policy terms, the individualistic approach remains dominant and has been so over many decades, whether in the emphasis on risk-based information and traditional health education, or in the recent vogue for behavioural economics and nudge theory. Yet, it is not so much that the evidence here holds sway (and, as this report shows, there is a lot of evidence), but rather the idea that the best route to addressing a health problem is via behavioural interventions of various kinds. The issue is that this gets translated into very simple ideas about behaviour change, and the subtleties and nuances of the evidence are side-lined in favour of simple solutions to complex problems. Meanwhile, the social determinants approach continues to pile up evidence, demonstrating unequivocally that poverty and disadvantage kill people, and kill people in very large numbers; and while the rhetoric of this has been adopted in some jurisdictions, the political actions flowing from it have little or no traction.

Therefore, while there are differences between the two approaches, these differences are not the problem. In the literature reviewed, as well as the broader social scientific material, these conflicts are for the most part side-lined and ignored. Researchers work within their own silos of interest. That is not to say the differences are unimportant, but it is to say that we should dwell less on the differences, try to avoid the academic debates and focus on drawing together what we know, and how best to make the study of human behaviour and social determinants a powerful weapon in improving population health.

All of which speaks to the necessity of developing consilience between the two approaches and not focusing on the limitations of both. Instead, we should work at the interface, deep in the complexity of the social processes that make up economic and political life, and facilitate the coming together of all that we already know.
Analysis and discussion

The literature reviewed shows that there remain two broad universes of discourses – social determinants on the one hand, and individualistic behavioural approaches on the other – and that they seem to say little to one another. The seven questions that framed the review remain only partly or incompletely unanswered by the review-level evidence.

Action on the social determinants of health may empower individuals to choose healthy behaviours that will prevent ill health and improve long-term health, or may secure individual health improvements without relying on individual agential power. However, this is an assumed rather than an empirically demonstrated relationship: there is an absence of evidence. It is not that actions on the social determinants do not or could not empower individuals to choose healthy behaviours, but we have relatively little review-level evidence to demonstrate this unequivocally.

It is certainly the case that some behavioural interventions equitably enable some individuals to adopt some healthy behaviours. The evidence is extensive. However, having a definitive understanding of which interventions, in which circumstances, for which behaviours, and the impact of these interventions on health equity is not so clear-cut. There is ongoing research that seeks to provide the tools to develop the answers, but there is still a considerable way to go (Michie et al., 2017). In addition, while there is a well-trodden argument that individual-level interventions tend to make inequalities worse, empirical data on this are limited in the behavioural literature. It is important to note that much is known about health-related behaviour change in relation to some interventions; however, the relationships to health inequalities are empirically less extensive.

The empirical behavioural review-level evidence about the extent to which behavioural frameworks have been used to improve understanding of the social and wider determinants of health is not extensive. However, there is enormous potential for the behavioural sciences to provide an increased contribution to the social and wider determinants of health. This, however, is not to be derived from the conventional literatures on either the social determinants or the individual-level interventions.

Based on the material reviewed for this report, it could not be argued that there are areas of work within the social and wider determinants of health where behavioural science approaches, frameworks and tools are inappropriate. There is an absence of evidence in the review-level literature (but not in the theoretical material) to demonstrate that such approaches and tools are appropriate. An important conceptual shift would have to be made to create this evidence and demonstrate its potential.

The methods used for behavioural sciences and the social and wider determinants of health are distinct, but their underlying philosophical and epistemological assumptions are similar. There are aspects of an apparent conflict between the concepts/perspectives of behavioural sciences and the social and wider determinants of health; but again, as will be argued below, there are ways to resolve these differences.
There are number of key points that can be made about the contribution of behavioural science to addressing the social and wider determinants of health, which are outlined below.

**Knowing what to do and how to do it**

In 2008, the report of the WHO Commission on Social Determinants of Health made clear that political will is a necessary precondition for change (Bonnefoy et al., 2007). Political leaders need to want to effect the change. There is little doubt that there are, have been, and will be in the future, political leaders who observe the injustices of global health inequalities and want to change things. The existence of evidence describing the inequalities is, and will remain, important. However, leaders need something more than evidence: they need to know “how to” turn it into a political and practical reality (L’Hôte et al., 2022). Knowing something to be unfair or wrong does not necessarily tell us what to do about it. The fact is that even when we know the cause, that does not tell us how to bring about the changes (Kelly & Russo, 2018).

There is a different and separate science and evidence base on how to make things happen. This evidence is behavioural, structural and institutional. It is drawn from a wide variety of disciplines and uses a very wide range of methods. It embraces everything from coaching, guidance, facilitation, understanding historical precedents, and working with and learning from communities.

Knowing how to do it – to bring about change – requires a different way of thinking. It requires starting from the point of view of ordinary people and not of the scientists who already know, or think they know, the causes of ordinary people’s problems, or the scientists seeking to change the behaviour of ordinary and (especially) poor people. It starts from the very simple premise that people know and understand their own life-worlds, they know what they do, and they can explain the reasons for what they do and why they do it. (Giddens, 1979, 1984). This is how to get inside the life-worlds of the people whom we think we want to help. We may have defined a particular issue as requiring our attention – in this case, the global injustice of health inequalities. The scientific data are very clear: poor social and economic conditions correlate with poor health and early death. However, is this the issue from the point of view of the impoverished and powerless? From the ground up, the problem may be one of day-to-day survival, of finding enough resources to put food on the table, of remaining in a job where conditions may be difficult or where employment protection may be minimal or absent altogether. In other words, the problems are not constructed in terms of a narrative about global injustice, so much as the need to cope and survive in the highly precarious here and now (Savage et al., 2015).

There is an important clue here as to the kinds of approaches that might then be pursued. An obvious example relates to measures that can protect and improve maternal and child health at local service level such as accessibility, continuity of care, immunization and nutrition (Kelly, 2018b). Then there are the sources of economic precariousness – employment contracts, terms and conditions, working hours and employment protection. It is certainly the case...
that the push towards neoliberal free market policies across the globe over the past decades has eroded many of these safeguards. Neoliberal policies have been profoundly important negative drivers towards inequality and health inequalities (Piketty, 2014; Varoufakis, 2015, 2016). However, locally-based solutions may help to begin to identify the ways in which neoliberal ideology and policy implementation have played out in real life and to offer local improved solutions. What solutions do people who must live with the daily consequences of these policies want? How do they see it?

It is important to distinguish between necessary and sufficient conditions. There is a wealth of evidence about the necessary conditions for effective prevention i.e., the evidence about aetiology, proximal risk factors, effectiveness, behaviour change and cost-effectiveness, and of the wider determinants. However, we must also focus on the sufficient conditions for prevention: that is, how does it work and what do you have to do to make it work? The evidence about the sufficient conditions needs to come from a multidisciplinary evidence base ranging across organizational studies, political science, public health, sociology, law, psychology, ethics, economics, geography and history, and crucially, the experience of people directly experiencing inequalities in health, alongside practitioners and commissioners working in the field. This is the evidence about how to create population-level changes locally, how to implement policies that benefit all segments of the population (shifting the inequalities gradient), and how to implement policies in ways that recognize how interventions are experienced (and resisted) by different communities while recognizing the social and cultural granularity of communities and neighbourhoods.

It is further important to note that the evidence about sufficient conditions for prevention is also the evidence concerned with some dimensions of health inequalities and social determinants. This is because the factors affecting uptake, access, and differential effectiveness of programmes and interventions, as well as the social practices that generate individual and population risk, are primarily social, cultural, historical and geographical in origin (Blue, Shove & Kelly, 2021). They are also highly localized and, in general, locally-based teams are in a much better place to nuance and adjust interventions to suit local circumstances (Kelly, 2021), as well as to ensure that factors are considered in a relational manner rather than individually (which is often the “easier” thing to do given limited resources/scope for action locally). Even where biological processes are intrinsic to disease progression, it is frequently the case that that biology is mediated by interaction with proximal social processes, as in epigenetics and developmental programming (Radford, 2018).

**Using knowledge from outside the peer-reviewed literature**

To understand the sufficient conditions for prevention will require the collation of knowledge from the empirical sciences with the knowledge of practitioners and, most importantly of all, knowledge from the people whom we are trying to help. This is particularly so at the local level of delivery, where
the need to know how to do effective prevention suited to local needs is most acute. There is substantial evidence and guidance about what to do, but how to do it effectively locally is not available in a well-populated and readily available evidence base (cf. Chassin & Loeb, 2013; Holden et al., 2013; van der Scheer et al., 2021).

Unfortunately, the inability to use the evidence about effective prevention and inequalities reduction is a chronic problem in public health worldwide (Bonnefoy et al., 2007), and the separation of the behaviour change and social determinants approaches does not help. This affects a huge amount of the delivery of public health and is a problem at global and national levels. It is also a problem at local level, because national and centralized decision-makers find it very difficult to nuance interventions to fit local circumstances, and more fundamentally to see the problem from the viewpoint of those operating on the front line.

Getting past the cognitive biases

It is vital to move beyond the cognitive biases that prevent the coming together of a social determinants approach and the focus on individual behaviour. Two cognitive biases in public health may be identified (Kelly, 2019): first, a dissonance between what is known and what is done, resulting in the repetition of solutions that have previously been shown to have little, or no effect; and second, the habitual use of heuristics, which means that simple solutions to complex problems are preferred to undertaking a detailed assessment of how to bring about change. The dissonance between what is known and what is done is plain to see, but is difficult to overcome. As this review shows, a lot is known about the broad patterning of the social determinants and even more is known about the science of behaviour change. However, the disconnect between what is done and what is known remains. The underlying reason for this disconnection is the second bias, i.e., the habitual use of heuristics, which means that simple solutions to complex problems are preferred to undertaking detailed analyses of complexity. This is an example of what Kahnemann called fast thinking, and fast thinking is often only partially right and frequently biased (Kahnemann, 2011).

The point is not that it is wrong to think about behaviour change as an important aspect of what needs to be done. It is the mistake of ignoring the known evidence base on the most effective and helpful ways to bring about behaviour change, and focusing exclusively on individuals as the best vehicle to effect change. What is required is what has been referred to as an ecologic approach, which conceptually involves the following reasoning: individuals think, act and do things based on cognitive and automatic processes and they have a sense of being unique, individual people taking this action based on their free will. The cumulative effect of billions and billions of individual actions shapes the nature of society. Society is patterned and structured, not random and chaotic. Those patterns and structures arise out of individual actions which, in turn, shape the nature of the possibilities as to what individuals can do. The structures do not determine human individual actions, but they significantly constrain their possibilities. In turn, human actions are the product of society, and society is the product of human actions. The two are in a
constant process of dynamic interaction with one another. The way to bring the social determinants approach together with what we know about individual behaviour change is to place it within this type of model, and to embrace the complexity – do the slow hard thinking that is required – to move away from the idea that the two camps are completely incommensurate and to find conceptual ways of not only of thinking about the issue, but also of helping policy- and decision-makers to think about the issue in this way too.

In practice, this means working through the issues “in the round” – holistically. Therefore, if the issue we wish to begin with is obesity, then thinking about it holistically starts with individual human appetites, food addictions and compulsive eating behaviours but also includes ordinary food consumption across the whole spectrum of the population. This means not thinking pathologically about morbidly obese persons, but about people. Obviously, shopping and food preparation must come into play, as well as all the cultural issues that shape what we eat, when we eat, with whom we eat, where we eat, and so on. We would then bring food availability, retail, marketing, supply chains, and so on, into the frame.

This is clearly a massive canvas. However, the important thing to remember is that as massive and highly complex as it may be, that does not mean it is unknowable and unmappable, or even that the marked variations in the population cannot be built upon. Some years ago in the United Kingdom, the Foresight Project created a systems map for obesity (Butland et al., 2007). The work was extremely comprehensive in identifying the phenomena involved (https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295153/07-1177-obesity-system-atlas.pdf). Unfortunately, the traction the Foresight Review had in policy was never as great as it could have been, and ministers shied away from the evident complexity involved. However, Foresight demonstrated that it is perfectly possible to undertake such a systems mapping process. In addition, as long as the map incorporates the dynamism of what is involved, then it can serve as a logic model for action.

**Actions and consequences**

An important point to bear in mind, by way of keeping dynamism in the picture, is that actions into systems will have consequences. Sometimes, if we are lucky, these are the consequences we intended; however, there will always be unintended and unanticipated outcomes. The great value of the mapping approach is that it allows many possible outcomes to be identified, which in turn means that certain courses of action can be avoided. The map does not tell the policy-maker what to do, but it helps them to make better decisions. Moreover, the nodes and the links in the map are precisely the points at which the detailed knowledge of human behaviours comes into play. So, the map will also be able to help to answer questions, for example: if there is a link between offering incentives and healthier shopping, how might that work? Or, what do we already know about incentives and their influence on human action? Therefore, rather than individual behaviour being the main paradigmatic predictor – if we do X, then Y will be the behavioural outcome – individual behaviour
becomes part of the explanation and part of what we might think of as “pre-evaluation”. In other words, thinking about the outcomes in advance of the interventions.

Both the social determinants approach and the behavioural approach share a focus on causes, although they do not necessarily share the same mechanism of causation. They identify different aspects of the causal pathway – distal or proximal – but, in many ways, the guiding logic is the same. The idea is that if causes are understood, then appropriate interventions aimed at the cause may follow. Two very powerful common-sense understandings of the history of public health help to drive this view (Kelly & Russo, 2018). The first concerns the transformation in sanitation in nineteenth century Europe and North America, which allowed for and facilitated the decline in many waterborne infections, with cholera usually taken as the classic case in point (Hamlin, 2009). The other, in the twentieth century, was the identification of the link between exposure to cigarette smoke and lung cancer and then heart disease (Doll & Hill, 1964). In both cases, underlying aetiological agents were identified i.e., the cholera bacterium, and the carcinogens and other pathogens in cigarette smoke. The solutions that follow are apparently simple – to prevent water supplies becoming contaminated and to prevent exposure to cigarette smoke. Both interventions have saved many millions of lives.

The control of waterborne infection looks like a classic social determinants approach, while the solution to tobacco use appears to be a classic behavioural intervention. However, if we dig a little deeper into the history of both cases, we find it is not so simple, and in fact these cases illustrate the need for a consilience between the social determinant and behavioural approaches. In the case of waterborne infection, the identification of the cause – the discovery of the bacterium and the development of the solution (sanitation) – occurred independently. For example, in London the engineers who designed and built the sewers thought that cholera was airborne and were trying to rid London of the smell of rotting waste matter (Halliday, 1999; Jackson, 2014). Their action undoubtedly worked, but not for the reasons that they expected. In the case of tobacco, the reductions in exposure to cigarette smoke occurred because of a range of measures, which include behaviour change as well as higher taxes and prices, addiction recovery and a cultural shift that made the practice of smoking cigarettes more difficult and eventually undesirable. In the case of the sewers, there was a long political struggle aimed at stopping the sanitary reforms, on the grounds that it restricted individual freedoms and inhibited business and commercial interests, and so on (Jackson, 2014). Evidence played little or no part in the decision-making process. However, the folk memory of both lingers on regardless of its skating over historically awkward facts. Importantly, it remains locked in a causal narrative which assumes that knowing the cause, whether it is a social determinant or a behaviour, tells you what to do and how to do it.

The language of individualism

Importantly, the prerequisite to knowing “how to” do it, requires a language which embraces a multi-level, multi-pronged approach. A language that
moves away from the simple heuristic of behaviour change on its own as the panacea. Nevertheless, there are significant barriers to getting the language right (Maani et al., 2022). Those barriers lie deep in the underlying assumptions that are commonplace in many fields of policy-making, including public health but also in science, medicine and beyond.

The most significant of these assumptions is the centrality of the individual human agent as the organizing epistemic principle. The idea that the individual is the target for action flows from a much broader common-sense belief that we think and act individually and are responsible for our actions. Legal systems, which hold individuals accountable, are a good illustration of this (Kane, Thornton & Bibby, 2022). The modern world is based on the idea that individuals as citizens, consumers, voters, employees, parents or patients define who and what people are. Individuality is manifested in birth certificates, driving licenses, passports, educational qualifications, and many other aspects of the way a modern state knows about, records and categorizes its citizens. Our individuality and our separation from other individuals are pervasive.

However, to some extent, this separation is illusory. Individuals are always in social relationships with other people. Being in social relationships is an inescapable part of being human – whether it is as parents, children, partners or workmates, or in neighbourhoods and communities. This relationality applies to those behaviours and relationships involved in eating, drinking, smoking, working and recreation. Of course, we can eat alone and can do many things solo. However, even if we do them alone, none of these things are possible without a multitude of relationships – past and present – where we originally acquired our tastes for this or that particular food, or that particular drink and so on. Moreover, the supply chain from field to fork, for example, involves many players in a sequence of activities that set constraints on the availability of food and drink. There is a material infrastructure, as well as many other people doing a multitude of things, that makes possible what we can and want to do ourselves. The obvious point following on from this is that if we only focus on individuals, we will miss the fundamentally social and relational nature of all of these things, and the very many levers for action that the supply chain and other infrastructures, as well as more local social relationships, provide. It is the type of thinking that has been highly effective in tobacco control in many high-income countries (see case-studies, below), but which has barely been touched upon with respect to the other so-called lifestyle-related diseases (Blue et al., 2016).

**Going beyond the individual**

We need to enlarge the categories used to describe the factors we wish to change, and that means expanding the kinds of evidence and methods we use to do preventive work. The disciplines of sociology, anthropology, economics, political science, business management and history all have important things to say about patterns of human life and their health consequences. The methods these disciplines use to gather their data may be usefully applied to the study of eating, drinking and so on. For example, it is widely believed in public health and policy circles that the epidemic of obesity, with all its attendant medical outcomes, is a major problem.
The penchant for sugary foods and drinks has been a frequent target for action. The current patterns of food consumption are not, however, a product of the last decade or immediate appetites and desires (Blue, Shove & Kelly, 2021). What is eaten, cooked, bought, produced and grown has its roots in the historical development of farming, trade and commerce over centuries. British taste for sweetened refined sugar, for example, was honed over generations of the production of cane sugar readily available from the Caribbean. It is inextricably bound up with the slave trade (Walvin, 2001). This should remind us that simply trying to change tastes through education, or nudges, is not something that can be easily achieved. What we eat is deeply culturally engrained. Obviously, we cannot change history, but we can certainly reflect on food consumption as something deeply embedded in culture over centuries and, therefore, amenable to change at the margins and incrementally, rather than rapidly. It also reminds us that there are no simple fixes (Blue, Shove & Kelly, 2021). What has been called an ecological perspective is required (Kane, Thornton & Bibby, 2022).

It is not only the historical method which is helpful. The social sciences have highly developed qualitative and observational methods that are well suited for studying human behaviour in its natural setting, rather than in a laboratory or experimentally. When thinking about physical activity as a target for intervention, for example, we would do well to see it not as a behaviour separate from everything else that people do, but as one aspect of people’s lives — which for people who are physically active is woven into their everyday pattern of life, much like cleaning their teeth or having a wash. On a narrower canvas, if we are thinking about the physical activity of children, we should be thinking about how they play, get to school and what they do at school, and see the extent to which there are barriers and facilitators in certain school environments. Understanding the behaviour in its natural setting is much more likely to reveal the factors that inhibit or encourage activity. In other words, we need to study behaviour in context and the myriad of ways it links to other activities and behaviours. We must not imagine that the other aspects of life are merely background, context or settings for activities.

To round off this report, four cases-studies are presented. The first – tobacco control – is an example of where the evidence used was heterogeneous and drawn from very broad literatures and traditions. The second – HIV prevention and control – is an example of where evidence was drawn from the ground up and not from the peer-reviewed literature, at least in the early years of the epidemic. The third is on the United Kingdom’s response to COVID 19, which is an example of the manifest failure to draw on evidence from different traditions. Finally, we use obesity as a way of illustrating how the theoretical ideas underpinning the consilience across different disciplines and traditions may be understood.
Tobacco control: where broad evidence, both behavioural and social/wider determinants, coalesced

In some jurisdictions, and the United Kingdom is an excellent case in point, tobacco control shifted many decades ago away from simply learning more about aetiology, attendant risk and messaging about risk and danger, and attempting to reduce risk through individually-oriented health education. The aetiological studies and health education did not stop but, crucially, policy-makers turned their attention to other phenomena and other forms of evidence as well. The economics of price and consumption, the psychology of addiction, the behavioural skills and competencies required to quit and maintain abstinence, the role of advertising, the political machinations of the tobacco companies to influence policy-makers and the general public, and the systematic efforts used by the industry to undermine the evidence base were all brought into play (see e.g., Taylor, 1984; Butler, Pill & Stott, 1998; Grey, Owen & Bolling, 2000; McVey & Stapleton, 2000; Besley & Askew, 2005; Carpenter et al., 2004; Healthcare Commission, 2007; Landman, Cortese & Glantz, 2008; Michaels, 2008; Gilmore et al., 2009; All Party Parliamentary Group on Smoking and Health, 2010). This approach to policy draws on heterogeneous evidence from psychology, economics, sociology, history, political science, public relations, marketing, business management, ethics, international relations and practice, as well as political experience. Moreover, the way that tobacco control came to be enacted was multi-layered, multi-pronged and multi-fronted, involving economic, industrial and fiscal policy, education, regulations, legal and statutory change as well as behaviour change. It was not one thing – it was many things done in concert. No one suggested that behaviour change was unimportant. Policy was not driven by the view that it was the only approach to use. The two traditions were corralled in the evidence and its application.

Nevertheless, the problem of inequalities remains in smoking-related deaths and morbidity. Overall, the success in bringing down total rates of smoking in the United Kingdom, for example, to less than 15% today from more than half of the adult population in the 1950s has been remarkable and noteworthy. However, as rates of smoking consumption have declined overall, smoking prevalence has come to be strongly associated with social disadvantage (Harman et al., 2006; Begh et al., 2011; ASH, 2016). A significant proportion of people who continue to smoke in a country such as the United Kingdom are from disadvantaged groups. The tobacco control strategy has now had to turn its attention to that particularly difficult problem (NHS England, 2019). The interesting thing to note here is that much was achieved at population level on tobacco control through strategies that were initially policy implementation of fiscal and legislative measures. Tackling tobacco use in communities where smoking rates remain high will require participatory action with smokers/quitters and local implementation. There will have to be a consilience of structural/systemic/policy orientation, with detailed knowledge and understanding of particular communities and groups.

Globally, the issue of smoking-related deaths has not gone away. While the noted successes of some high-income counties are reminders of the way a multi-faceted approach can work, inequalities in smoking-related disease remain, both within and between societies.

The lessons of tobacco control serve as a powerful reminder that population health change is achievable. However, to bring about change requires multidisciplinary evidence and a corresponding wide-ranging and integrated multi-level approach, which includes individual behaviour change strategies and all points up to and including economic policy and legislation. A multi-level approach needs to draw on evidence from different disciplines – this is the evidence on which effective prevention depends.
As argued above, a community-oriented approach to evidence is required. This means learning from the life experiences of the people that the public health practitioners and policy-makers wish to help. The idea of taking a bottom-up approach was given an enormous boost by a number of initiatives from WHO and especially the principles of the Ottawa Charter of 1987 (WHO, 1986). The idea was in essence very simple: to work with communities to empower them to facilitate ground-up generated health improvement. Since then, there has been a wealth of knowledge generated about what are variously called health promotion, community engagement and asset-based approaches (Morgan, Davies & Ziglio, 2010).

A community-oriented approach to evidence is required. This means learning from the life experiences of the people that the public health practitioners and policy-makers wish to help. Perhaps the best illustration of this is HIV prevention and control. When the epidemic began in the 1980s, there were no effective treatments. Long before treatments became available, however, effective preventive interventions had been devised. The necessary evidence was that there was a virus. The sufficient evidence related to sexual activity and sharing contaminated needles and syringes. The preventive strategies such as providing clean needles and drug-injecting equipment and condoms was initially corralled with the help of the gay community and by practitioners working with drug users in local areas (WHO, UNODC & UNAIDS, 2009; House of Lords Select Committee on HIV and AIDS in the United Kingdom, 2011; Fowler, 2014). It was a new form of public health. The alliances that were formed between professionals and people living in affected communities worked very well, and interventions such as condom distribution in bars and nightclubs and the provision of clean needles and other drug paraphernalia proved to be very effective.

During the COVID-19 pandemic, efforts were made by governments across the world, unparalleled in modern times, to change population behaviour on a mass scale. The approach taken in the United Kingdom clearly illustrates the need for consilience between the individual behavioural and structural divide, and the failure to achieve it.

A special committee, known by the acronym SAGE (the Scientific Advisory Group for Emergencies), advised the Government of the United Kingdom of Great Britain and Northern Ireland on scientific matters during the pandemic. This committee consisted of scientific experts and others. Its job was to review evidence as far as it was available, and to make recommendations to the Government on the handling of the emergency (HM Government, 2020). The committee had a number of expert groups, including one on modelling and one on behavioural science (respectively the Scientific Pandemic Influenza Group on Modelling (SPI-M) and the Independent Scientific Pandemic Group on Behaviours (SPI-B)). In respect of health behaviour, the membership of the committee was broad and included some of the leading behavioural scientists in the country. Claims were made early on in the daily government briefings that the Government would follow the science, and on one occasion the Chief Scientific Advisor noted that the Government would follow the behavioural science too. The nature of the evidence which was subsequently pressed into service was, however, narrow and highly individualistic in orientation. On 23 March 2020, following several days of increasingly alarming messages, the Prime Minister announced in a broadcast to the nation that there would be a lockdown for the whole country. This was accompanied by a raft of highly threatening information about the number of cases, the number of deaths, and warnings to look out for the symptoms (although at that time, the symptoms of loss of taste and smell were not included in the list). A series of rules were put in place designed to encourage as few social contacts as possible in order to prevent the spread of infection. People with pre-existing serious medical conditions were instructed to socially isolate and shield. The dangers of the disease were publicized widely. People were told to stay away from hospitals and many were sufficiently alarmed.
at the prospect of hospitals being major foci of infection that they voluntarily did so. Ordinary life was effectively closed down.

What followed was a most remarkable example of behaviour change on a mass scale. The United Kingdom population did as it was told. “Stay home protect the NHS”, as the slogan went; and they did. Each day a solemn televised briefing was held live from Downing Street during which the Prime Minister or other senior cabinet minister, flanked by the Chief Medical Officer and the Chief Scientific Advisor, or other senior official, would intone dramatic statistics about the likely death toll and the dangers facing the whole country. The messaging was clear and simple. There is a deadly disease, which is likely to overwhelm the NHS and all you as citizens can do is stay home and avoid contact with everyone else. The television, radio and newspapers carried similarly dire warnings.

Initially the population (in the United Kingdom) were highly compliant with the rules. This surprised many, and SAGE certainly did not think the population would respond in the way that they initially did. Where predictions had been made about the unwillingness to comply with lockdown rules, for example, they proved to be wide of the mark. A quick look back at the history of compliance by the civilian population in the face of enemy bombing in World War II should have led to questioning these non-compliance predictions immediately. Nevertheless, it appears that the historical record/evidence was ignored in favour of extrapolation from a limited amount of psychological evidence. The idea that people respond well to threats and sanctions – which was the line that policy took at various times – is once again devoid of an historical or real-world understanding of compliance, to everything from queuing, standing on the right-hand side of escalators on the London tube, to voluntary compliance with smoke-free legislation when it was introduced. That was because policy-makers appear to have favoured a particular type of individually-based psychological evidence, and did not consider the historical data about population behaviour in national emergencies, as in the case of civilian compliance during the Second World War and vaccination programmes for tuberculosis in the 1950s.

Early on, the idea surfaced that the perceived level of personal threat needed to be increased among the population, who were apparently complacent or likely to become so. The plan was to use hard-hitting emotional messaging. Once again, key parts of the evidence seem to have been ignored. There is an extensive literature about the way that people respond to threats. One important model, called the stress-coping paradigm, suggests a two-phase relational and interactive response. The first phase involves appraisal of threat – asking the question, “to what degree is the stimulus benign or malign – a threat or not?” The second phase is concerned with working out what can be done about the threat. Second phase actions may involve taking direct action, denial, worry or doing nothing and hoping for the best (Lazarus & Folkman, 1984).

The evidence shows that the ability to act effectively in the face of threat involves social interaction with others – i.e., it is a social transaction or practice – and involves, as all practices do, using skills and, quite likely in the case of a new pandemic, skills that people did not already possess or had never practised before. To help people cope, we need to help them develop the necessary skills and capabilities. What we definitely should not do is just let them deal with the threat de novo and expect them to work it out from first principles. In the framework of another important model, we may have motivated people but if they have neither the capabilities nor the opportunity, behaviour change will not happen (Michie, van Stralen & West, 2011).

This in turn led to the use of increasingly threatening messaging, accompanied by heavy-handed legal sanctions. These were very blunt instruments, the effectiveness of which waned over time, and created ill feeling and resentment. Many people realised that the Government’s insistence that everyone was in it together and at equal risk was manifestly wrong; risk was not equally shared across the population. Some groups were at markedly greater risk from the very start, and anyone with a passing familiarity with health inequalities, multiple long-term conditions and the social determinants literature would have known this and been able to predict that patterning that emerged in mortality. Evidence from front-line health professionals, local directors of public health and general practitioners was ignored in favour of the infectious disease models, which did not take account of the highly variegated nature of the United Kingdom’s population (Horton, 2020; Scally, Jacobson & Abbasi, 2020).
A notable development was the tendency of ministers and some public health officials to adopt a language of punishment-centred enforcement as time moved on. New laws were enacted, new offences created, new powers given the police to enforce the various regulations with threats of fines, and even imprisonment, for transgressors. The language and narrative were no longer one of voluntary compliance in a self-regulating and self-policing society, but one of increasing observation and interference in the private sphere of people's lives. Who was visiting whom, which households were socializing in their homes in an illegal way, and so on, became matters of legitimate interest for the State, even encouraging ordinary citizens to be its eyes and ears in this endeavour and to spy on and report their neighbours' transgressions.

The wider behavioural and social scientific evidence which could have been used, but was not, is extensive. There is extensive evidence about the society we live in and the people who make up our communities. Patterns of living, of work, rest and play, and how these change and evolve, are grist to the mill of history, sociology, anthropology, geography and community studies. As well as being found in the social scientific literature, this knowledge is held by local public health teams and by communities themselves. Even a passing acquaintance with some of this material tells us several key things. There are very high degrees of social variegation in the population. We are not all the same and we do not all behave in the same ways. These variations are not randomly chaotic and governed by chance: within the highly granulated worlds of ordinary people there are patterns. The patterns of health inequalities manifested in ethnic minority communities, for example, is well known. The links of all of these to wider and social determinants is well established. However, during the pandemic in the United Kingdom it was as if it was all hidden in plain sight. United Kingdom governments and their modellers, for example, seem to have been completely blind-sided as to the patterns of employment in care homes and the possibilities of the spread of infection there, and at least initially to the greater risks to the ethnic minority community, older people and people with existing NCDs – the diseases driving health inequalities and driven by wider determinants.

This is remarkable, given that the United Kingdom has produced some of the most sophisticated research about health-related behaviour-change in the world. It would have been the obvious place to start, even if the research would require interpretation and assessment in the light of the pandemic. Some of the scientists who have developed this evidence were on government advisory committees. However, this was not the evidence used. Instead, a series of the same old tried, tested and failed superficially common-sense solutions about individual human behaviour were rolled out, with a peppering of nudge-inspired ideas and limited modelling in terms of the types of data input. This is extraordinary given that the scientific evidence supporting nudge and behavioural insights is so thin, compared to mainstream health-related behaviour change.

In summary, evidence about the structure of British society and its social variegation, existing patterns of health inequalities, the patterning of risks from pre-existing medical conditions that overlap with extant health inequalities, neighbourhood and community, as well as patterns of people’s work lives – in short, the social practices of everyday life in the United Kingdom – were never part of the way policy was enacted. There was no consilience.
Obesity and dietary behaviours: where a social practice approach should improve outcomes

In this last case example, we try to show how a social practice approach might work using obesity as our case in point. The prevailing orthodoxies in relation to obesity are causal, linear and usually reductionist. They provide a set of heuristics for policy-makers. However, as with all heuristics applied to complex problems, they tend to be biased and are often wrong (Kahneman, 2011). Obesity is not one thing, measurable by BMI or body mass. It is a wide range of processes emerging out of practices that involve multiple other processes and practices, and which have been interacting with each other over many generations.

These many different aspects of social life may be likened to different tributaries feeding a river. Each tributary contributes to the highly complex nature of the hydrology of the flow of the water in the river. The flow is ultimately the result of the very many different tributaries and their own origins, histories and geologies. If we think of the obesity as the overall river flow, public health interventions as well as the actions of key players, such as the commercial and retail sectors, enter the stream at different points. Immediately they enter the stream, they are themselves altered by it. They are akin to twigs, branches or other debris falling into the river. They become part of the flow and part of the movement, acting as either an obstacle to the flow, or simply carried along with it. Even if they constitute an obstacle to the flow, eventually the flow will be sufficiently strong, or by attrition it will alter the obstacle in a myriad of ways. The flow itself is not simply the physics of the movement of the water. It will be affected by the geology of the riverbed and the terrain the river passes through, and the terrain will itself be affected by the flow of the water, which itself has many strata, twists and turns – which anyone who swims in rivers knows from the varying temperatures.

It is sometimes unhelpful to use metaphors, particularly if the user of the metaphor reifies it, and it is taken as a description of reality, rather than a way to understand that reality better. However, what a good metaphor does is to create a way of visualizing these complex interactions (cf. Derrida & Moore, 1974). In this case, the river metaphor provides a way of embracing the key features of social and economic life which are pertinent. Further, to acknowledge that any intervention will inevitably be changed by the very act of intervening is very important. Interventions are not static and unchanging, but things which are themselves given a dynamic once they are in the flow or the mix, the consequences of which are very difficult to predict. However, this does not mean it is impossible to know.

There are tools that can help here. Careful pre-evaluation of policy interventions would be a very good start (Samset & Christensen, 2017). Another way to proceed is to study empirically what happens in real time, as a basis for future actions, while acknowledging that actions have to be understood as tentative and contingent. Practices and their connections are a good way to do this. Pre-evaluation and empirical investigation are preferable to the overreliance on programme theories – beliefs about what is thought will or ought to happen, without a full understanding of the complex interactions involved (Pawson & Tilley, 1997). An intervention going into a complex system will not have results that can be predicted by simple cause and effect models.

History must be taken into account. Standing on a riverbank watching it flow past, at a single moment in time, tells the cursory observer nothing about the preceding conditions upstream or the geology of past aeons, how they have shaped the river and its immediate currents and eddies. Similarly, observing contemporary obesity prevalence, tells us nothing about the historical or other social conditions that have led to the current state of affairs. Most obviously, the way we will eat our food today is not just a consequence of a decision made this morning or when looking at a menu. It is a property of the coming together of very many historical, social, and political as well as commercial, technical, and industrial actions going back decades and longer. What we eat, when we eat and with whom we eat are the products of all of these things, and can only be fully understood as such. Simple recommendations to eat less, exercise more or consume fruit and vegetables will on their own achieve nothing very much and will simply become, as they have done, one more part of a complex discourse about food and eating.
The shape and size of human bodies is a trace of bodies’ interactions with the social world and their social and biological historical inheritance. What happens in the human body through dieting or consuming calories cannot be separated from its interactions with the social world. Epigenetics and metabolomics demonstrate how the intertwining occurs (Kelly & Kelly, 2018). Just as the geology of the riverbed interacts continuously with the flow of water and the water interacts continuously within itself and with the riverbed, the body and society are in a continuous interaction and impact on one another. They are intrinsic. Molecular biology now demonstrates how this happens (Radford, 2018). This microbiology aligns with what Bourdieu theorized sociologically a generation ago (Bourdieu, 1990, 2000). The important corollary is that if our efforts to change obesity focus only on the body and do not focus on the body and society together, and how practices shape the relationship, it will be so much wasted effort.

To get this way of thinking embedded in society at large, as well as in policy, requires a reframing. To give one simple but important example: people live and work in communities, and their dietary practices will reflect that community and the practices of the sale, availability and types of food in these communities. These features are an intrinsic part of the culture of that community. When there are large numbers of fast-food outlets in particular places, they are there not because of the wickedness of the retailers or the stupidity of the consumers. They meet a demand, which aligns with a series of other practices in that community. Clearly advising people to eat more healthily in such an environment is not going to have much traction without a means to break the links or alignments with other practices, or without considering the nexus within which the food is available and consumed. It is also the case that these community nexuses are highly localised, as well as being deeply embedded culturally and historically. Therefore, the public health action that should follow is not national-level campaigning about the benefits of a healthy diet but a highly granular approach at local level, in particular locales where the nexus of practices and people are to be found (Stones, 2005).

In short, policy needs to recognize the dynamic nature of the process into which it is inputted, and its impact on the process. Policy should acknowledge the complex web of interacting practices that together drive current and future levels of obesity. It needs to stop focusing on body–society dualism and simple linear cause-and-effect conceptions, and instead adopt ways of thinking about the world that take as a starting point the complexity of practices and their historical and cultural embeddedness. Obesity policy has to work with the grain of these practices while seeking to break some of the links between them in ways that, for example, successful tobacco control has achieved (Blue et al., 2016). Obesity is a process that carries the traces of other practices, both contemporary and historical. It is a social and bodily interactive process. It is not an outcome, and to limit its understanding to definitions of BMI or calories in and out is to fail to see this. To do so is an epistemic error because it rules out of the account other kinds of knowledge that might be relevant to the problem. It is complex – but complexity is what science is concerned with, along with revealing and understanding that complexity. Science is not about simple (but wrong or biased) answers to complex problems. It is about acknowledging the complexity in the world and finding answers in the complexity.
Conclusion

The aims of this investigation were to explore how the behavioural sciences have contributed to addressing the social and wider determinants of health, and how they could do so in future; and to examine the similarities and differences in approaches taken by public health teams focused on addressing the social and wider determinants of health, and by behavioural scientists working in public health.

There has been extensive attention in the behavioural and social sciences to the social and wider determinants of health. Much of this is located in literature that is concerned with individuals and with individual behaviour. This literature is extensive, and we may say with confidence that we know a lot about health-related behaviour change, which deals in part with questions of disadvantage, SES, ethnicity, disability, gender and so on. However, this literature tells only one part of the story. A separate literature focusing on upstream determinants is also extensive but is not grounded in the empirical sciences of behaviour change, instead drawing upon epidemiological and clinical data concerned with the aetiology of a particular set of NCDs, and with the generalized arguments about the ways in which broad and sometimes specific social and economic factors affect health. The two literatures crossover a little, but not extensively. Nevertheless, there remains the possibility of consilience at a practice, policy and research level; but to make that consilience possible, a shift in thinking is required to allow real interdisciplinary work to occur. It is important for researchers and policy- and decision-makers to move beyond single disciplinary paradigms to see the problems of, and solutions to, health inequalities in their entirety.

The evidence base is extensive and strong. But the silos relating to behaviour change and social determinants are not integrated. The intersections between the various dimensions of social differences in the population are seldom developed. Similarly, the silos relating to smoking, alcohol consumption, eating and physical activity are deeply embedded in research funding, institutions and practices, and do not facilitate approaches to policy, or to conceptual thinking, which could bring about the changes that would lead to the lessening of health disparities between social groups. Behaviours such as eating and drinking, or smoking and physical activity, are not separate from each other. They are part of people’s lives – what people do, the practices in which they engage – and are intrinsic to the social world they inhabit and the psychological processes going on in their minds. The pathways from these practices and processes to the biology of the human body have begun to be hypothesised, and the empirical evidence about mechanisms is slowly beginning to accumulate. At a political level, the importance of a unified or holistic conception of human health, human society and the individual needs to be embraced. This will require political will and, importantly, the political will to go beyond simple, and usually wrong solutions, to the highly complex problem of inequalities in health.
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