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Bennett Prospect Prize for Public Policy 2019/20

"Which single public health intervention would be most effective in the UK?"

UNIVERSITY OF CAMBRIDGE

The Bennett Prospect Prize for Public Policy is awarded by the Bennett Institute for Public Policy at the University of Cambridge and is held in partnership with Prospect Magazine. The goal is to encourage early career researchers and policy professionals to explore creative and generative solutions to a pressing public policy question of our age.

In 2019/20 we asked: 'Which single public health intervention would be most effective in the UK?'

In this publication we share with you the winning essay by Dr Vageesh Jain as it appeared in Prospect Magazine on 16 April 2020, with a new introduction in context of the Covid-19 pandemic.

We are also delighted to share the essays from the other finalists for the prize, Bessie O'Dell, Kendall Jamieson Gilmore, and Dr Oliver Mytton.

Many of the entries this year focussed on the need to improve physical and mental health across societies for wide-ranging benefits and protection against a range of health problems – our final four writers all approach public health from this perspective. Each one presents insightful policy proposals worth further exploration.

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The Food & Beverage Industry Levy (FBIL)

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This article appears in its final version as published in Prospect Magazine on 16 April 2020.

Coronavirus has shown the need to improve health across populations. Here's the first thing we should do

The foremost public health emergency in our mind at the moment is, of course, Covid-19. But we must be careful, not to forget more familiar enemies, such as hypertension, cancer and heart disease, which are all closely associated with Covid-19 severity and mortality.

As we saw in the 2013-14 Ebola outbreak in West Africa, when the health system is preoccupied with one disease, others can run rampant. The latest Office for National Statistics (ONS) death statistics show an extraordinary rise in deaths from causes other than Covid-19, leaving doctors around the world nervous and bemused.

To offset the potentially devastating indirect impacts of Covid-19 and future pandemics, we need healthier populations. In this pursuit, we can either target those at highest-risk, or introduce measures that affect the masses. It is easy to imagine that highly targeted public health interventions are most effective, but this is not always the case. Note that with Covid-19, the global position quickly escalated from tracing and testing high-risk individuals, to enforcing lockdown measures affecting everyone.

A population centered approach

Covid-19 aside, as long ago as 1985 in an article "Sick Individuals and Sick Populations", epidemiologist Geoffrey Rose questioned the traditional presumption that interventions should only target high-risk groups.

Rose observed a "painful truth" that even for those deemed to be low risk, the commonest cause of death was by far coronary heart disease. Everyone, he concluded, "is a high-risk individual for this uniquely mass disease." Rose opined that even a small reduction in risk at a population level would therefore provide a greater benefit than merely targeting those at highest risk.

Since Rose's article, extensive evidence has accrued in his support. From obesity to smoking, interventions affecting whole populations are known to be more effective than those targeting high-risk groups alone. Such measures typically involve legislation to inculcate healthy behaviours at a societal level. By changing society from above, they do not depend on a sustained individual response. These measures therefore have the potential to be the most effective, equitable, and affordable, of all interventions.

Health Taxes

The vast majority of spending on health is delivered through government: the NHS system and the wider public sector. Investing in any individual public health intervention diminishes the government's ability to invest in another, as both are derived from a common budget. Moreover, no complex public health issue can be confronted with one single intervention, no matter how effective. The only single intervention that has the ability to deliver long-term health benefits at almost no financial cost to the state, instead generating revenue, is a health tax. Its effectiveness is a corollary of not just its own impact, but also the other interventions it runs alongside, and for which it preserves funds.

Adam Smith, considered the father of free market economics, affirmed "Sugar, rum, and tobacco are commodities which are nowhere necessaries of life… which are therefore extremely proper subjects of taxation." Excise duties on these goods have indeed delivered huge improvements in health worldwide by facilitating long-term behavioural change. According to the World Health Organization, a significant increase in tobacco tax is the most cost-effective measure to reduce tobacco use. Public health policy must now turn to the leading risk factor for disease in the UK: diet.

The Soft Drinks Industry Levy (SDIL) was introduced in the UK in 2018 as part of the national strategy to combat childhood obesity. One year after its introduction, sugar content within the soft drinks sold decreased by 21.6 per cent, removing 30,100 tonnes of sugar from soft drinks in a year. The overwhelming success of the SDIL led to calls from the former UK Chief Medical Officer to extend the levy to other harmful goods.

The Proposal: A Food & Beverage Industry Levy

One of the major criticisms of the SDIL is that sugar is not just found in beverages. We cannot expect far-reaching health benefits without a reduction in the consumption of *all* sources of processed or added sugar.

My idea for a Food & Beverage Industry Levy (FBIL) would bring together a combination of excise taxes on a range of goods known to be deleterious to health, to be paid by producers and importers. It was cooked up with a variety ingredients from around the world: the fat tax in the Indian state of Kerala, the junk food tax in Mexico, the salt tax in Fiji and the SSB tax in the UK. The proposed list of taxable items, shown below, takes into account goods known to contain high concentrations of harmful products, existing UK industry targets, and also goods that are most frequently overconsumed in the UK, as outlined in the latest Public Health England National Diet and Nutrition Survey.

The inclusion of essential food items in the 2011 Danish fat tax led to its unpopularity and repeal. The FBIL accordingly excludes goods usually considered essential, or staple parts of diet, such as bread, rice, and milk. It also excludes some harmful products such as industrial produced trans fatty acids, from the perspective that they should be banned altogether, as they are in Denmark and Austria.

Domain	Item
Salt	Salty snacks Condiments and sauces Processed meats (excluding those under saturated fat) Fresh and frozen ready meals and soups Tinned produce (e.g. baked beans)
Sugar (food)	Chocolate confectionery Sweet confectionery Breakfast cereals Sweet spreads and sauces Yogurts and fromage frais Desserts (e.g. ice cream, lollies)
Sugar (drinks)	SSBs (as currently defined in UK SDIL) Fruit juices Milk-based drinks (excluding plain milk) Energy drinks Alcopops
Saturated Fat	Fast food (e.g. burgers, chips, pizza) Morning goods (e.g. pastries, buns, waffles) Cakes and biscuits Fatty meats (excluding those under salt) Butter, lard, ghee, high-fat oils and cheeses Creams (e.g. crème fraîche, sour cream)

Health Benefits of the FBIL

In the UK, cardiovascular disease (CVD) continues to be the leading cause of death in those aged under 75. These deaths are not inevitable. Indeed, many Covid-19 patients die from cardiovascular complications, triggered by the infection but facilitated by pre-existing disease. A staggering 80 per cent of (non-Covid-19) premature cardiovascular deaths are thought to be preventable, related to lifestyle. By targeting dietary risk factors, the FBIL can treat the problem

at source—breaking the long chain that goes from poor diet to obesity, hypertension and high cholesterol, through to heart disease, stroke, and sometimes death. Since many diseases share these common risk factors, the benefits extend beyond CVD, to dementia, cancer and mental illness prevention too.

The principal components of diet responsible for obesity are sugar and saturated fat. As sugar consumption has increased in the UK, the rate of diabetes has soared and is predicted to hit 4 million cases by 2025. Reducing sugar consumption provides a powerful counterweight to the crisis: a 2019 modelling study estimated that a 20% reduction in the sugar content of high-sugar products would result in 154,550 fewer cases of diabetes over ten years. Saturated fat is excessively consumed by 80% of the UK population. It is not surprising therefore, that NICE estimates 30,000 CVD deaths in the UK are preventable every year, if average consumption of saturated fat is halved from current levels, to 6–7% of total energy intake.

But it isn't just about fat—a special word is due on salt, the leading dietary risk factor for high blood pressure. Hypertension is the largest single known risk factor for CVD. It affects one in four UK adults, and is associated with at least half of all heart attacks and strokes. Until now, government policy on hypertension has centred on early detection followed by clinical management, which usually means medication. But the 2019 NHS Long Term Plan has stated that a reduction in salt intake of 1 gram/day could prevent 1,500 premature deaths, and save the NHS over £140 million a year. The current strategy on salt reduction though, founded upon voluntary initiatives with industry, is woefully out of step with this ambition. If the government wants to make good on this—or the plan's other goal to prevent 150,000 strokes, heart attacks and dementia cases over the next ten years—it is going to have to do more.

The FBIL represents the low-hanging fruit that must be picked ahead of more costly 'downstream interventions' to later deal with the fatal consequences of obesity, hypertension and high cholesterol.

Design & Implementation

In designing the levy, the primary objective must be to improve health rather than to generate government revenue. With this in mind, industry must be given sufficient time to react to the levy, as seen with the SDIL where the announcement was made two years in advance of implementation. An expert, interdisciplinary team will set and revisit objectives, liaise with stakeholders, and establish a process for monitoring and evaluation as it is phased in.

It is imperative that the tax substantially increase costs from baseline, specific to the dietary component. For instance, salt is inexpensive, requiring a much higher rate of tax than sugar or saturated fat to adequately influence price and thereby induce product reformulation. Thirdly, other taxes on goods must be altered to operate in harmony with the FBIL. For example, some biscuits are subject to a 20% VAT rate whilst others have no VAT at all. The FBIL provides a long-overdue opportunity to revisit not just other taxes but also existing subsidies. Finally, the tax must be adjusted to keep up with changes in inflation and levels of disposable income, similar to the (now repealed) UK alcohol duty escalator.

Securing political, public and industry support will be vital. The food and beverage industry typically shudders at the prospect of regulation, but the wiser heads within it will recognise the

advantage of getting ahead of fast-changing public priorities. Consumers are—already—showing they are willing to pay for healthier products. There is an opportunity to be had: health and profit are not mutually exclusive. Note that overall sales of soft drinks increased by 10.2 per cent in 2018, after the introduction of the tax.

Another, more serious, anxiety for some is that consumption taxes are considered regressive, penalising the poor. But many risk factors are concentrated in poorer groups, meaning the health benefits delivered through the FBIL would also accrue in these groups. Social justice will not be advanced by our continuing to turn the poor into the sick. Besides, any revenues generated from the tax can be used progressively—as they were in the Philippines, where revenues from alcohol and tobacco taxes are earmarked for health insurance coverage for the poor.

A tax whose time has come

Back in 1985, Geoffrey Rose transformed the way we think about improving health. Yet despite their proven effectiveness, the population level interventions he supported remain relatively unexploited, due to their political, multi-stakeholder nature. Health taxes provide an inimitable opportunity to invest in health whilst generating public sector revenue. Harnessing the power of fiscal policy will prove instrumental in preventing thousands of preventable heart attacks and strokes. The majority of those dying with Covid-19 have underlying chronic conditions: now is the time for such policy change. Following the success of the UK Soft Drinks Industry Levy, a comprehensive extension in the form of a Food & Beverage Industry Levy is not just reasonable, but essential.

Access Mental Health Services (AMHS): A proactive approach to the identification and treatment of depression

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Key recommendations:

- Quickly and proactively identify symptoms of depression using an app and web-based screening tool.
- Implement screening tool during GP registration process, in primary care settings and in outreach locations (e.g. schools and care homes).

Introduction

The burden of depression

In England alone, an estimated 4-10% of people will experience depression in their lifetime[1]. A substantial portion of the public is therefore at risk of developing debilitating symptoms ranging from a reduced ability to think or concentrate, to feelings of worthlessness, fatigue, loss of energy, and recurrent thoughts of death and suicide attempts.[2] Such symptoms arise from a range of depressive disorders categorised by ICD-11[3], each of which can fall under the inclusive term of 'depression'. This includes the most commonly encountered disorder in clinical practice - major (unipolar) depression, through to persistent depressive disorder, postpartum and psychotic depression.

As well as being psychologically and emotionally taxing, depression is financially burdensome both to individuals diagnosed with the disorder and to the wider community. Researchers have recognised that the economic costs of having depression are among the highest of any disease, predominantly resulting from increased medical care use, lower quality of life and decreased workplace productivity.[4] For example, the total cost of depression among adults in England is upwards of £9 billion, of which £370 million represents direct treatment costs.[5] Further, it has

[1] McManus, S., Meltzer, H., Brugha, T., Bebbington, P. and Jenkins, R. (2009). Adult Psychiatric Morbidity in England 2007: results of a household survey. NHS Information Centre for Health and Social Care. [online] Available at: https://digital.nhs.uk/data-and-information/publications/statistical/adult-psychiatric-morbidity-survey/adult-psychiatric-morbidity-in-england-2007-results-of-a-household-survey [Accessed 28 Dec 2019].
[2] American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). https://doi.org/10.1176/appi.books.9780890425596
[3] World Health Organization (2019). International Statistical Classification of Diseases and Related Health Problems (11th ed.).
[4] Williams, S. Z., Chung, G. S. and Muennig, P. A. (2017). Undiagnosed depression: A community diagnosis. SSM - population health, 3, 633–638. doi:10.1016/j.ssmph.2017.07.012
[5] Thomas, C.M. and Morris, S. (2003) Cost of depression among adults in England in 2000. Br J Psychiatry. 183: 514–519.

been estimated that during the year 2000 alone, 109.7 million working days were lost and 2615 deaths were due to depression.[6]

Treatment

At present, patients with a clinical diagnosis can be offered a range of treatments and interventions, depending upon NHS resources and the severity of the disorder (e.g. mild, moderate or severe). Patients with mild depression may be referred to external resources such as mental health apps, local self-help groups and group exercise classes.[7] [8] First-line treatment for moderate to severe depression is substantially more costly and time-intensive, and can include the patient being prescribed antidepressant medication and/ or talking therapies, such as Cognitive Behavioural Therapy (CBT), psychoanalysis and psychodynamic therapy or systemic therapy. There are also more novel approaches available, including controlling environmental factors like smoking cessation[9], and in the case of treatment-resistant depression, neuroscientific techniques such as Transcranial Magnetic Stimulation (TMS)[10] and Deep Brain Stimulation (DBS).[11]

The need for a public health intervention

In the UK it is estimated that more than one third of total visits to a General Practitioner (GP) involve a mental health component.[12] By extension, most care for depression is also delivered by GPs.[13] However, current management of depression in primary care has been found to be suboptimal.[14] For example, only about half of people with depression are detected in general practice.[15] [16] Further, the likelihood of depression being diagnosed correctly is also significantly reduced when patients present with both painful and nonpainful somatic symptoms,[17] or when they are male. This is in part because men have been found to seek mental health help far less

[6] In this study, recorded data on health service use by patients with depression was analysed and the cost of treating patients was calculated. The cost of working life lost was estimated from sickness benefit claims and the number of registered deaths of patients with depression (p.1).

[7] NHS (2019). Treatment: Clinical Depression. Available at: https://www.nhs.uk/conditions/clinical-depression/treatment/ [accessed: 20 Dec 2019].

[8] NHS (2019). Mental Health Apps. Available at: https://www.nhs.uk/apps-library/category/mental-health/ [accessed 30 Dec 2019]

[9] Secades-Villa, R., González-Roz, A., García-Pérez, A. and Becoña, E. (2017). Psychological, pharmacological, and combined smoking cessation interventions for smokers with current depression: A systematic review and meta-analysis. *PLoS ONE*. 12(12). Doi: https://doi.org/10.1371/journal.pone.0188849.

[10] Janicak, P.G. and Dokucu, M.E. (2015). Transcranial magnetic stimulation for the treatment of major depression. *Neuropsychiatric Disease and Treatment*. 11: 1549-1560.

[11] Mayberg, H.S., Lozano, A.M., Voon, V., McNeely, H.E., Seminowicz, D., Hamani, C., Schwalb, J.M. and Kennedy, S.H. (2005). Deep Brain Stimulation for Treatment-Resistant Depression. Neuron. 45(5): 651-660. DOI: 10.1016/j.neuron.2005.02.014

[12] Ferenchick, E. K., Ramanuj, P. and Pincus, H. A. (2019). Depression in primary care: part 1—screening and diagnosis. BMJ. 365 :794. DOI: 10.1136/bmj.l794.

[13] Mitchell, A.J., Vaze, A. and Rao, S. (2009). Clinical Diagnosis of Depression in Primary Care: a meta-analysis. *The Lancet*. 9690: 609-619. DOI: https://doi.org/10.1016/S0140-6736(09)60879-5

[14] Barley, E.A., Murray, J., Walters, P. *et al*. Managing depression in primary care: A meta-synthesis of qualitative and quantitative research from the UK to identify barriers and facilitators. *BMC Fam Pract* 12, 47 (2011) doi:10.1186/1471-2296-12-47

[15] Baas, K., Wittkampf, K., Van Weert, H., Lucassen, P., Huyser, J., Van den Hoogen, H., . . . Schene, A. (2009). Screening for depression in high-risk groups: Prospective cohort study in general practice. British Journal of Psychiatry. 194(5), 399-403. doi:10.1192/bjp.bp.107.046052

[16] Freeling, P., Rao, B. M., Paykel, E. S., Sireling, L. I. and Burton, R. H. Unrecognised depression in general practice. *Br Med J (Clin Res Ed)* 1985; 290 :1880

[17] Kapfhammer H. P. (2006). Somatic symptoms in depression. Dialogues in clinical neuroscience, 8(2), 227–239.

than women, but also because of potential unconscious gender bias in diagnostic judgement.[18] Generally, a number of factors have been found to influence clinician's ability to recognise depression in patients, ranging from familiarity with the patient to general clinical experience and time availability.[19]

Additionally, it has been found that if they do mention it at all, patients will often wait until the end of a primary care consultation in order to share concerns about depressed mood[20]. Research suggests that this is in part due to stigma surrounding mental health issues[21], but may also be indicative of broader problems, such as somatic health issues taking precedent during consultations. Such situations leave little room for GPs to adequately address the patient's diagnostic and treatment needs. Undetected depression is particularly troubling because it can lead to the exacerbation of symptoms to the point of suicide, and in other cases can lead to further public health issues such as alcoholism. There is therefore a very strong case for screening depression, particularly in a manner which targets clinical symptoms before they are given the opportunity to advance.

WHO guidelines

The World Health Organisation (WHO) has suggested adopting a proactive attitude with regard to early identification of people at risk of developing depression. In particular, their 2016 guidelines fittingly recommend that depression prevention be integrated in existing health systems, as well as beyond health care settings such as being embedded in schools, workplaces and homes for the elderly. They also highlight that this will require a more comprehensive view from those working in the health care sector, with a focus not only on somatic illnesses, but also on the mental aspects of wellbeing.[22]

Proposal: Access Mental Health Services (AMHS)

Concept

The proposed public health intervention is an app and web-based screening tool for depression designed to be rolled-out in two areas, namely (1) primary care settings, such as GP surgeries (**proposal 1**, below), and secondly (2) in outreach locations such as homeless shelters, schools and homes for the elderly (**proposal 2**, below). The screening tool will be developed using evidence-based research, and in line with ICD-11 diagnostic criteria in order to screen people for (1) exhibiting symptoms of depression, and/or (2) being at a high risk of developing depression.

[18] Call, J. B. and Shafer, K. (2018). Gendered Manifestations of Depression and Help Seeking Among Men. *American journal of men's health*, *12*(1), 41–51. doi:10.1177/1557988315623993.
[19] Baik, S. Y., Bowers, B. J., Oakley, L. D., & Susman, J. L. (2005). The recognition of depression: the primary care clinician's perspective. *Annals of family medicine*, *3*(1), 31–37. doi:10.1370/afm.239
[20] Tylee, A., Freeling, P., Kerry, S.and Burns, T. (1995) How does the content of consultations affect the recognition by general practitioners of major depression in women? Br J Gen Pract. 45:575-8.pmid: 8554836.
[21] Rössler, W. (2016). The stigma of mental disorders: A millennia-long history of social exclusion and prejudices. *EMBO reports*, *17*(9), 1250–1253. doi:10.15252/embr.201643041.
[22] World Health Organization (2016). Preventing Depression in the WHO European Region. Available at: http://www.euro.who.int

The aim is to develop a highly functional app which does not take more than a couple of minutes for a patient to complete. A combination of academic research and commercially developed apps suggests that this is feasible. In research settings, a number of quick paper-based measures have already been identified as effective for identifying and classifying primary care patients in need of clinical attention, based for example on core subsets of depressive symptoms,[23] some using as few as two questions in patient populations such as the elderly.[24] Easy to use, self-administered patient questionnaires such as the Patient Health Questionnaire (PHQ-9) have also been utilised in order to make a tentative diagnosis of depression in at-risk populations.[25]

In terms of app or web-based interfaces, depression-screening tools such as PHQ-9 have also been found to be more effective psychiatric measures in primary care than GP unassisted judgements of depression, when delivered via a touch-screen computer.[26] Furthermore, commercial app developers have already utilised technological advancements in order to produce apps which offer mental health assessments over a period of days or weeks, such as Moodpath,[27] which seeks to assist people in making a judgement call about exploring professional treatment. Further, the NHS website has a simple web-based mood self-assessment tool, which is designed to point people in the right direction for helpful advice and information.[28]

What is lacking at present, is a comprehensive, engaging, well-advertised and accessible screening tool. One which can be completed both quickly and discretely, which is properly integrated into the national healthcare system, which efficiently signposts additional resources and is capable of scheduling in further support at the point of use.

[23] Brody, D.S., Hahn, S.R., Spitzer, R.L., et al. (1998). Identifying Patients With Depression in the Primary Care Setting: A More Efficient Method. Arch Intern Med. 158(22):2469–2475. DOI: :https://doi.org/10.1001/archinte.158.22.2469

[24] Tsoi, K.K.F., Chan JYC, Hirai HW, Wong SYS. (2017) Comparison of diagnostic performance of Two-Question Screen and 15 depression screening instruments for older adults: systematic review and meta-analysis. The British Journal of Psychiatry 1–6. DOI: 10.1192/bjp.bp.116.186932

[25] See, for example: https://patient.info/doctor/patient-health-questionnaire-phq-9#ref-2

[26] Carey, M., Jones, K., Meadows, G., Sanson-Fisher, R., D'Este, C., Inder, K., … Russell, G. (2014). Accuracy of general practitioner unassisted detection of depression. The Australian and New Zealand journal of psychiatry, 48(6), 571–578. DOI: 10.1177/0004867413520047

[27] Moodpath App. For further information, see: https://mymoodpath.com/en/

[28] NHS (2019). Mood Self-Assessment. Available at: https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/[accessed 30 Dec 2019].

Figure 1. An example of the AMHS screening tool to be used in primary care settings.

The proposed public health intervention seeks to increase Access to Mental Health Services (AMHS) in the UK, in order to proactively identify clinical and subclinical symptoms of depression, and thus to treat cases earlier on in the onset of the disorder. The overall aim is to reduce the psychological, economic and social burden of depression which stems from both the disorder itself and from more costly, long-term interventions.

AMHS will seek to produce an NHS- ready app and corresponding web-based tool of its own. It is designed for use both in clinical encounters (e.g. in GP surgeries) and remotely, such as via a web-based platform when registering with a GP. It will additionally be downloadable in app form. It will also be specially adapted for use in outreach settings, and for situations in which patients are potentially less digitally literate (e.g. care homes and homeless shelters).

Proposal 1: Access Mental Health Services (AMHS) in primary care

The AMHS screening tool will be designed to undertake the following tasks:

Early identification

- Ask a series of short questions to assess the patient's mood and symptoms.
- Enquire whether the patient falls into any at-risk groups, such as being pregnant or having a chronic somatic health condition.
- Assess whether the patient has previously been referred or received treatment for a psychopathological disorder.

Signposting and referral

- Make recommendations to the user centred on answers to the questionnaire (e.g. 'based on the answers provided, we advise that you speak to a GP this week').
- Present the user with on-screen options for scheduling an appointment with a GP or mental health first-aider, and signpost further resources for the diagnosis and management of depression-like symptoms.

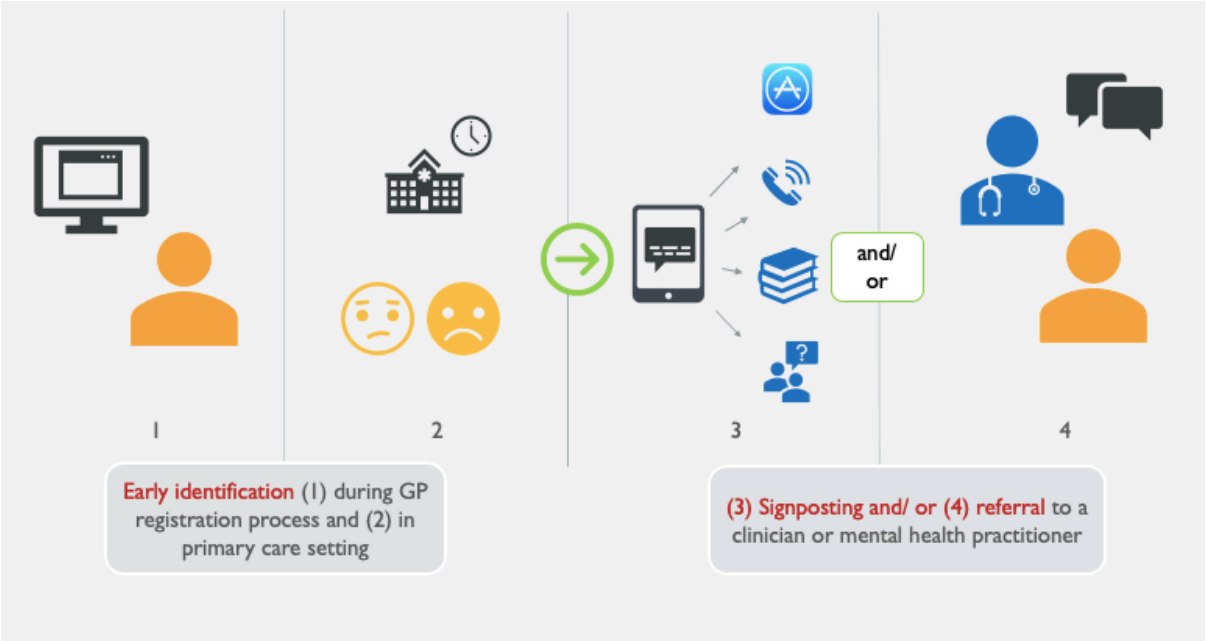

Figure 2. The Access Mental Health Services (AMHS) process in primary care.

The AMHS screening tool will firstly (1) be presented in various formats to people who are registering with an NHS GP surgery in the UK. In order to reduce the risk of incompatible platforms, it is expected that this will be integrated into existing systems (e.g. on a screen during an online registration process, after the patient is required to enter their personal details). Secondly, (2) it will be available for download on personal smartphone and tablet devices and will be advertised in GP surgeries. The availability of this option will allow for discretion in cases where patients fear stigma in using the platform in a public setting, or from using a mental health related service. Thirdly, (3) patients will be signposted to further resources if required, and/ or (4) referred to a clinician.

Primarily, the screening tool will be made available in GP surgeries on tablet devices in areas such as waiting rooms and reception areas. Patients will be prompted by reception staff to use the devices during their visit. This is much akin to the introduction of self-service blood pressure monitors in GP waiting rooms for patients to utilise whilst awaiting their scheduled

appointments.[29] When making recommendations, the screening tool will also provide on-screen options to schedule a GP appointment for a future date, or to speak with a GP or mental health first aider that day (where available).

Further, the app will present the patient with an option to print out recommendations to take home with them (in which a small receipt-like printout will be provided), or to email it to themselves. There will also be an additional selection to print a similar note to pass to their GP during their existing appointment. This option will facilitate discussion with the clinician regarding depression, whilst reducing the burden on the patient of having to instigate the topic. This may be particularly appealing for members of the population who feel uncomfortable raising psychological issues, or who tend to downplay their symptoms. Due to patient privacy issues and foreseeable issues with technological compatibility, it is not expected that patient details will be stored, nor that an option will be given to forward information directly and electronically to the GP or surgery.

Proposal 2: AMHS outreach

In line with WHO guidelines, the second component to the proposed AMHS intervention is to adopt the aforementioned depression screening tool for use in outreach locations. Researchers have already recognised the utility of using rapid screening tools such as PHQ-9 in the school setting within the USA, where it provides school nurses with greater confidence in identifying and referring students in need.[30] Intervention with adolescents experiencing subclinical signs of depression has also been found to significantly reduce depressive symptoms and the incidence of depressive disorders, as well as reduce risk for long-term adverse outcomes.[31] Given that depression is a neurodevelopmental disorder which typically emerges in adolescence[32], school-age children are a particularly important target for the intervention.

Further, a significant amount of research suggests that depression goes undiagnosed in the elderly, where a 'stiff upper lip' may be preventing older people from voicing mental health concerns.[33] Depression similarly goes undetected in a vast number of people who are homeless. For example, in spite of 80% of homeless people in England reporting that they had mental health issues in 2014, only 45% were ultimately diagnosed with a condition.[34] These groups both present particular difficulties when it comes to recognising and treating depression, due to comorbid health conditions, issues with GP registration and access to NHS

[29] Tompson, A.C., Schwartz, C.L., Fleming, S., Ward, A.M… McManus, R.J. (2018). Patient experience of home and waiting room blood pressure measurement: a qualitative study of patients with recently diagnosed hypertension. *British Journal of General*; 68 (677): e835-e843. DOI: 10.3399/bjgp18X699761.

[30] Law, W. C., McClanahan, R. and Weismuller, P. C. (2017). Depression Screening in the School Setting: Identification of the Depressed Adolescent. *NASN School Nurse*, *32*(6), 364–370. DOI: https://doi.org/10.1177/1942602X17726095

[31] McCormick, E., Thompson, K., Stoep, A. V., & McCauley, E. (2009). The Case for School-Based Depression Screening: Evidence From Established Programs. *Report on emotional & behavioral disorders in youth*, *9*(4), 91–96.

[32] Paus, T., Keshavan, M. and Giedd, J. N. (2008). Why do many psychiatric disorders emerge during adolescence?. Nature reviews. Neuroscience, 9(12), 947–957. DOI:10.1038/nrn2513.

[33] YouGov (2017). "Stiff upper lip" may be preventing older people from sharing mental health concerns. Available at: https://yougov.co.uk/topics/health/articles-reports/2017/10/24/stiff-upper-lip-may-be-preventing-older-people-sha [accessed 30 Dec 2019].

[34] Homeless Link (2014). The unhealthy state of homelessness: Health audit results 2014. Availible at: homeless.org.uk/sites/default/files/site-attachments/ The%20unhealthy%20state%20of%20homelessness%20 FINAL.pdf [Accessed 30 Dec 2019].

services, treatment adherence and digital literacy. This is despite, for example, depression being more common in those with multiple chronic conditions.[35] There is therefore scope for introducing a screening tool in these locations, albeit carefully tailored to the particular needs of the groups and individuals involved.

In the case of outreach locations, the AMHS intervention will be carefully adapted to the populations being targeted, with care taken to ensure that appropriate and ongoing support is provided. For example, in the case of care homes, additional support will be required from staff who can navigate the tool on behalf of the elderly patient, and who can verbalise the questionnaire and input the responses. There are a number of additional and important considerations which diverge from primary care settings, and which need to be taken into account. This includes issues around informed consent (e.g. in school children), privacy, digital literacy and access to primary care NHS services for continued support (e.g. in the case of people without a permanent address).

Implementation support

AMHS will require development assistance and backing from a number of organisations. Firstly, both permission and support from the NHS will be pivotal in implementing this public health intervention into existing clinical structures. Assistance will also be sought from units such as NHS X, which has been recently established to guide the digital transformation of health and social care within the NHS.[36]

Further, this project will require support and feedback from clinicians (e.g. psychiatrists and psychologists as well as GPs), in order to ensure that the screening tool adequately encapsulates the heterogenous disorder that is depression. Patient preferences and attitudes towards the screening tool will also need to be sought and incorporated. For this reason, it will also be important to involve research institutions such as universities. This is in order to run pilot studies and to consider the project from a range of perspectives – ranging from medicine and bioethics to economics. Doing so will allow for the identification of barriers and facilitators to implementing the intervention in clinical practice.

Conclusion

AMHS aims to target members of the public who exhibit both clinical and subclinical signs of depression, but who are undiagnosed. Specifically, it is looking to target people who might not recognise that they need help, who are afraid to seek it, or who might be focused on other health problems. By introducing the intervention in multiple settings, it is hoped that a broad number and range of people will come into contact with (and benefit from) the proposed service. In addition, this intervention is also looking to introduce consistency across primary care settings, and to provide the best referral and treatment options available in the limited

[35] Greenberg, S.A. (2012). The geriatric depression scale (GDS). *Best Practices in Nursing Care to Older Adults*. 4:1–2.
[36] For more information on NHS X, see: https://www.nhsx.nhs.uk/

time allocated per patient visit to the GP. Resultantly, it is expected that the currently enormous economic, societal and personal burden of depression will be reduced by introducing an early, evidence-based and highly effective screening tool for depression.

Building healthier communities

Kendall Jamieson Gilmore, PhD student at the Scuola Superiore Sant'Anna in Pisa, Italy

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"Gin-drinking is a great vice in England, but wretchedness and dirt are a greater; and until you improve the homes of the poor, or persuade a half-famished wretch not to seek relief in the temporary oblivion of his own misery, with the pittance which, divided among his family, would furnish a morsel of bread for each, gin-shops will increase in number and splendour."

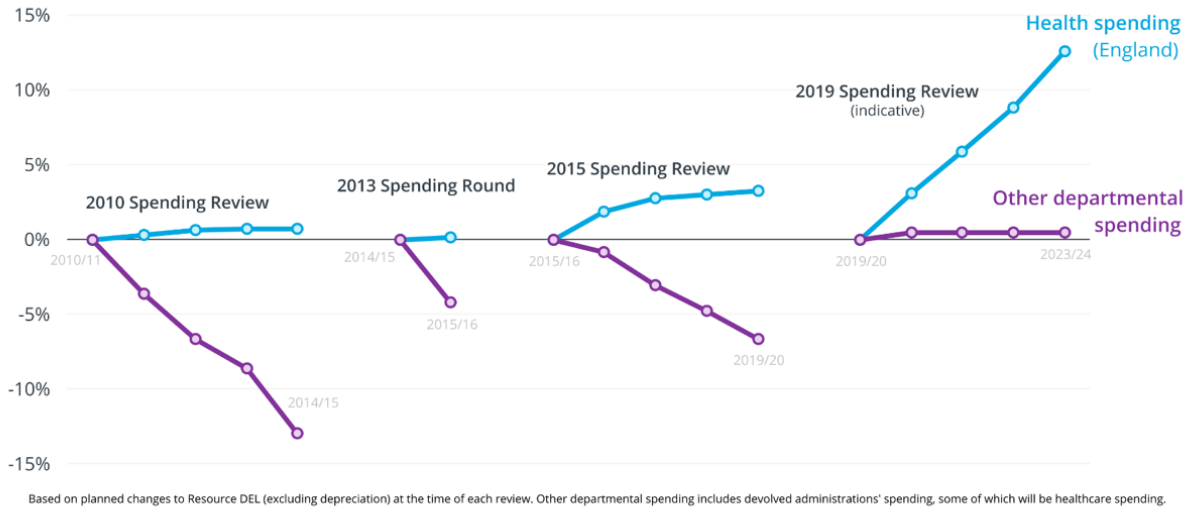
Charles Dickens

The enduring necessity of a healthcare system as extensive as the NHS should be considered a failure of wider public policy.

Most healthcare is reactive; this is recognised and lamented at almost all levels in health and care delivery. Surgeons decry their inability to reduce the flow of individuals injured through road traffic accidents, while GPs regretfully send sick children home to food and fuel poverty. Even public health interventions are broadly focused on the direct risk factors for ill health, rather than the causes of the causes. There is always a step 'upstream' which would be more effective. Indeed, only around a quarter of health outcomes are attributable to the care people receive. Another fifth may be attributable to health-related behaviours - which we increasingly recognise not as a product of meaningful choices by individuals but of the environments they inhabit. The vast majority of health outcomes are due to social and economic drivers, and environmental factors [1].

The largest scope for impacting people's health in the UK is not through provision of healthcare, nor even of traditional public health services. It has long been recognised that, after a certain point, more medicine does not deliver better health [2]. The current causes of ill health cannot be addressed by more of the same (though *less* of the same certainly does not help). And yet, recent government spending rounds have consistently prioritised health at the expense of other important services which themselves moderate the need for healthcare. We invest in the airbags at the expense of the brakes.

Planned real terms change in day-to-day departmental budgets at Spending Reviews: comparison of health and non-health spending



Extracted from Institute for Government analysis of HM Treasury, Spending Reviews 2010, 2013 and 2015, and Budget 2018 (for SR 2019). [3]

There is abundant evidence that sufficient money, good housing, education, access to affordable nutritious food, and exercise spaces (often described as social determinants) are all important for health, and that they are inequitably distributed [4]. Data illustrating the extent of health inequalities becomes no less shocking through its familiarity: a recent paper in The Lancet Public Health found that more than one third of premature deaths in England are attributable to socioeconomic inequality [5]. Investment in the direct socioeconomic factors can and does deliver health gains. However, looking more deeply at the evidence, one can see that this is *not in itself sufficient* to tackling the determinants of health. Our psychological and social circumstances are critical - and often under-addressed - determinants of health and wellbeing.

"the mind is an important gateway through which social conditions affect health and health inequalities".
Professor Michael Marmot [21]

Many of us recognise this from our own experience. I previously supported the management and evaluation of a service seeking to reduce loneliness; the most memorable and rewarding days were visiting the service, speaking to staff and programme participants. On one visit I chatted with a gregarious elderly couple, Simon and Mary. One year previously, they were isolated, lonely and felt hopeless. They were miserable, and their physical health was rapidly declining. Through support from a local volunteer over several months to attend community events, they rebuilt their confidence and reengaged in society. They were happier, and healthier. Simon was keen to emphasise that he now supported other isolated people, helping them find meaningful connections with others. The evident joy he and Mary had in this sense of purpose and of their new role in the local community was a powerful indication of the importance of identity and of human connection.

Research into the causes of excess mortality in Glasgow relative to other cities with similar levels of deprivation highlighted two key vulnerabilities: a lack of social capital (also described as "positive social connectedness" and "community support"), and a democratic deficit (lack of representation in and efficacy of political processes). Together, these lead to a perceived lack of agency, helplessness and despondency – recognised as 'psychosocial' risk factors associated with poor health outcomes [6]. There is wider evidence that social capital, including features such as neighbourhood social cohesion, is associated with self-rated health [7]. The Princeton economists Anne Case and Agnus Deaton similarly found that significant sustained increases in "deaths of despair" (those due to suicide, alcohol-related liver mortality, and drug overdoses) in the USA were shaped by such complex interactions [8]. In the UK, this phenomenon is recognised by doctors as Shit Life Syndrome, describing not just the implied direct drivers of poor health, but also the broader sense of despair, hopelessness and lack of agency associated with chronic disadvantage [9]. Basic income is important for health, but insufficient.

Other research has found the psychosocial factors associated with deprivation and inequality have a direct physiological impact, known as allostatic load, and that genetic processes related to cellular ageing and to immune function are affected by these same factors [10]. Shit Life Syndrome is real; there are physiological mechanisms directly translating psychosocial factors into poorer health.

The explanatory factors Case and Deaton identified – globalisation and technical changes reducing labour market opportunity, and related social changes – are present and growing in the UK; perhaps more so in the future as the country finds its place in the global economy outside the European Union. In fact, these deaths of despair are already rising in the UK. As the authors note, this "may provide something of a warning flag".

Specifying policy aims

Considering this evidence, and recognising that the majority of public health and related interventions insufficiently address the real causes of poor health and wellbeing, it follows that the most effective public health intervention should have three objectives:

- to address the social determinants directly affecting people's health: employment, appropriate housing, a local environment providing clean air and green spaces, and others;
- to increase community capital, building and strengthening links within and between social groups, fostering a sense of belonging and connectedness in communities; and,
- to increase individuals' sense of agency and representation, demonstrating that local voices have a real impact in decision making and that there are meaningful democratic processes.

The Marmot Review described many of these issues and provided recommendations to tackle them 10 years ago. Progress has been disappointing [11]. There are numerous programmes which aim to address one of these objectives, some very effectively [12]. However, these valuable initiatives are necessarily constrained by their scope of remit, and by available funding. There are no policies or interventions which target all three objectives at scale – and therefore none which maximise impact.

The intervention: *a national investment programme into housing and community infrastructure, defined and delivered through participatory local decision making*

The proposal is a nationally funded investment into the structural drivers of ill health, directed and planned by local communities, and explicitly designed to create the structures (both physical and social) which support continued local cohesion and personal agency. There are four principles:

1. Funding will be provided by central government and directed locally by dedicated development trusts. Development trusts are community owned and led organisations which seek to develop or renew the local social, economic and environmental circumstances. They operate for the benefit of the community, not for private profit, and are independent but work collaboratively with other local partners [13].
2. Each trust must be established according to deeply enshrined principles of participation, representation and accountability. Trust governance and membership must be representative of the local community. In addition to those most directly involved, the trust must engage closely with the wider community through a variety of mechanisms as appropriate to each area: citizen's assemblies; referenda; digital participation and voting; direct engagement with faith groups, community groups; other direct participation as determined by local communities; and codesign workshops. This community engagement and codesign must take place constantly, informing the initial period of priority setting but also, critically, to report back on progress to date and to reappraise and confirm priorities as additional developments are identified and funded.
3. The specific uses of investment must be directed at the broad social determinants of health and must be focused on developing or improving *physical assets* to the benefit of the local community.
4. Funded projects will be delivered by local businesses as far as feasible.

Funds will be awarded to trusts which demonstrate their eligibility, not on the basis of proposed local investment. National government will have no role in approving uses of funds at local level. Trusts must demonstrate that they meet objectives 3 and 4, but not justify specific projects.

Where a trusts' activities result in a financial return, for example developing housing which is subsequently rented or sold, this could be used by the trust according to the same principles but with greater flexibility e.g. provision of ongoing revenue support for a newly built community centre.

Funding will be awarded based on a combination of need and readiness, using a formula including population size and deprivation. There will be no restrictions on geographic areas or community sizes – that will be for local people to decide. Funds may be awarded over several years. The most challenged areas may need the longest time to come together. A small pot of funding alongside the main investment will be provided for local areas to purchase services e.g. facilitation support, legal advice.

The value of the national funding could vary depending on the scale of ambition of the government of the day. Several billion pounds – over several years as communities come together in response to the announcement - would be desirable and feasible.

Effect mechanism

The intervention is effective at several levels:

- The process of coming together to agree priorities at community level and engaging within and across social groups helps to build cohesion and social capital. In addition, there is promising evidence that the resulting community infrastructure such as green spaces, housing regeneration or community hubs increase social capital, social networks and community trust in the medium and long terms [14]
- Community participation in priority setting, local democratic decision-making processes and ongoing engagement accompanied by physical evidence of the impact of these decisions demonstrates representation and efficacy of democratic processes. This will help increase individuals' perceived sense of agency and reduce democratic deficits.
- Trusts will directly fund projects which improve the physical environment: housing quality will improve through new developments and upgrades; green spaces will be created and improved; new community centres will provide meeting spaces and facilities; cycle and walkways will improve. These will improve health and wellbeing through direct (e.g. removal of damp and cold housing) and indirect (e.g. increased sight of green space) mechanisms [15].
- Economic activity driven by funded projects will improve local financial circumstances. Using local businesses retains investment in the local area, and drives a local multiplier effect leading to additional employment and economic benefit in the community [16]. Employment is good for health, in addition to benefits arising from increased income [17].
- Targeting development at more deprived areas may reduce economic inequality by increasing growth rates relative to wealthier areas. Economic inequality directly and indirectly leads to worse health outcomes.

The aggregate impact of these effects would be an improvement in population health and wellbeing in the short and long terms, delivered through *both the process and results* of policy delivery.

The precise effects are unknown, both because specific projects will depend on what local communities choose, and due to the nature of public health; there are no simple linear effects from intervention to outcome. Rather, there are complex systems affecting health, and improved outcomes are delivered through reshaping the factors within those systems [18]. By targeting the broadest upstream factors, and aiming to change the context which shapes behaviour - rather than individuals' behaviours – this policy proposal should lead to substantial and enduring improvements in population health.

Feasibility and political will

While expensive for a public health intervention, this is public health by stealth. There is a widely recognised need for additional and improved housing stock in the UK. Many areas clearly require regeneration and environmental improvements. There is political will. New investment in these areas of the scale proposed here would not be considered a doubling or more of the c£3bn public health budget, but rather alternative management of a few percent of planned government infrastructure investment [19]. Mainstream economists now agree that fiscal multipliers from government expenditure are higher than previously assumed, and that stronger fiscal consolidation leads to lower growth [20]. This understanding - and the resulting view that government investment can drive economic growth – appears to have been internalised by political parties on all sides. Increasing government investment is inevitable; the targeting of expenditure on social determinants of health and on the devolution of decision-making can be considered as incidental to the investment itself.

Importantly, it results in physical improvements to the environment. The sorts of improvements which elected representatives can highlight as evidence of the impact of their policies and of their commitment to the communities in question. There is no need for a difficult communication strategy explaining the increases in community capital and personal agency; these notable successes can remain unheralded by dint of the obvious physical developments. There are no notable associations with political viewpoints. It aligns with the agenda of devolution away from central government to promote local empowerment.

Finally, the policy can be evaluated against any or all of the effect mechanisms above. For some purposes, the number of new housing units may be all that matters. For others, it will be the long-term changes in the social gradient in health. Even if some intended health impacts are not observed – for example, because of prevailing wider economic conditions – the policy can be considered a success according to other more direct metrics. Decision-makers can be assured of an impact in at least the basest metrics of success.

Summary

It is clear that the social and economic determinants of health have not been adequately addressed in modern history. The frustration of health and care professionals recognising this in their daily work signifies the enduring failure of government to truly embed health and wellbeing in all policies, and to leverage investment most effectively for the benefit of the population.

This context inevitably points to the broad focus of the most effective public health intervention in the UK. The case is overwhelmingly clear. Significant action is required to insulate communities against ongoing global social and economic changes, and to address historic inequalities. A major programme of investment into the structural determinants of health inequalities, designed to increase community capital and personal agency, would significantly improve health and wellbeing in the short and long terms. Everyone dies, but many of us could be a lot healthier and happier – and require less healthcare - up to that point if the right conditions were present.

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The Healthy Food Act

Dr Oliver Mytton, public health doctor and Clinical Lecturer in public health at the MRC Epidemiology Unit, University of Cambridge.

Emma is eleven years old. She is 1.4 metres tall and weighs 55 kg. This means she has obesity.

Emma is not unusual. She has a sweet tooth and does not like vegetables. She eats chocolate bars most days, and regularly goes to the local chicken shop with her friends. She is largely a happy girl, although she has been bullied about her weight.

Emma also has asthma. Because of her obesity, she has more frequent and severe asthma attacks. Fat has started to build up in her liver. While this does not cause any problems for her, she does need to see a liver specialist for monitoring.

Even with specialist help, her obesity will probably persist into adult life. It may then cause a range of problems: heart disease, stroke, type 2 diabetes, some cancers, joint and muscle problems, reduced fertility, depression and liver disease. This will not only reduce her life expectancy, by as much as six years, but also her years lived in good health, by as much as 15 years.[1]

Emma is also likely to earn less than someone who is a healthy weight. On average an adolescent girl with obesity earns £100,000 less across a lifetime.[2]

Why does Emma have obesity?

Emma's parents find it hard to manage Emma's weight. Unhealthy food options permeate into many areas of their life. It is not just takeaway outlets that offer unhealthy food options, but many other shops too, newsagents, petrol stations and clothes shops; as well as other places, leisure centres, cinemas, bus and rail stations. Shops know what tricks work to get people to buy more: placing confectionary near the checkouts, using cartoon characters that directly appeal to children, placing sweets at children's eye level. The unhealthy food options flow freely, and Emma's parents are drowning.

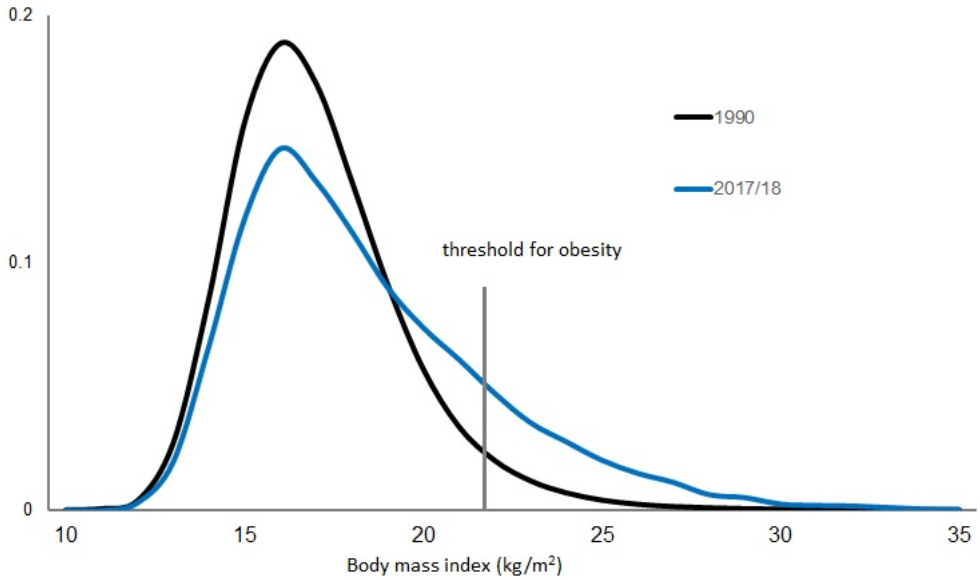
It is the unhealthy foods and brands that burn brightly in Emma's mind. Companies compete hard to place their products centre stage, buying up prime time slots on family shows and billboards near schools. Increasingly companies can advertise directly to children online, making use of 'advergames' (free to use computer game used to market unhealthy food). Sponsorship of major sporting events, children's sporting activities and festivals may be used to create brand recognition and a positive aura around unhealthy products.

The advertising and messaging for healthy food is drowned out by that for unhealthy foods. In 2017, £302 million was spent promoting sugary drinks and snacks in the UK, compared to £16 million spent promoting fruit and vegetables.[3] Young minds are much less able to recognise, let alone understand and resist advertising. Is it any wonder that Emma and her friends are constantly seeking sweet treats?

It may be common to attribute Emma's obesity to genes or poor parenting, but as Emma's story illustrates there have been profound changes in the type, availability and marketing of food, which make it much harder to eat healthily and maintain a normal weight. Sadly, Emma is no longer unusual. In 1990, only one girl out of 100 was like Emma. Today for every 100 girls aged 11 years, 15 will have obesity like Emma.

The increasing number of people with obesity is an indicator of profound and widespread changes in food available[37]. Everyone is exposed to these changes and pressures. It is affecting nearly everybody's diet and health. Many people who are a healthy weight will be consuming a poor diet that is affecting their health. Overall, only 13% of adults meet the recommended intake of sugar, 9% the recommended intake of fibre, and 17% the recommended five daily portions of fruit and vegetables.[4,5] More needs to be done to ensure we all have the opportunity to eat healthy food.

Fig 1: All children have got heavier: the body mass index of girls aged 11 years comparing 1990 and 2017/18



Source: 2017/18 National Child Measurement Programme; 1990 based on UK growth standards.

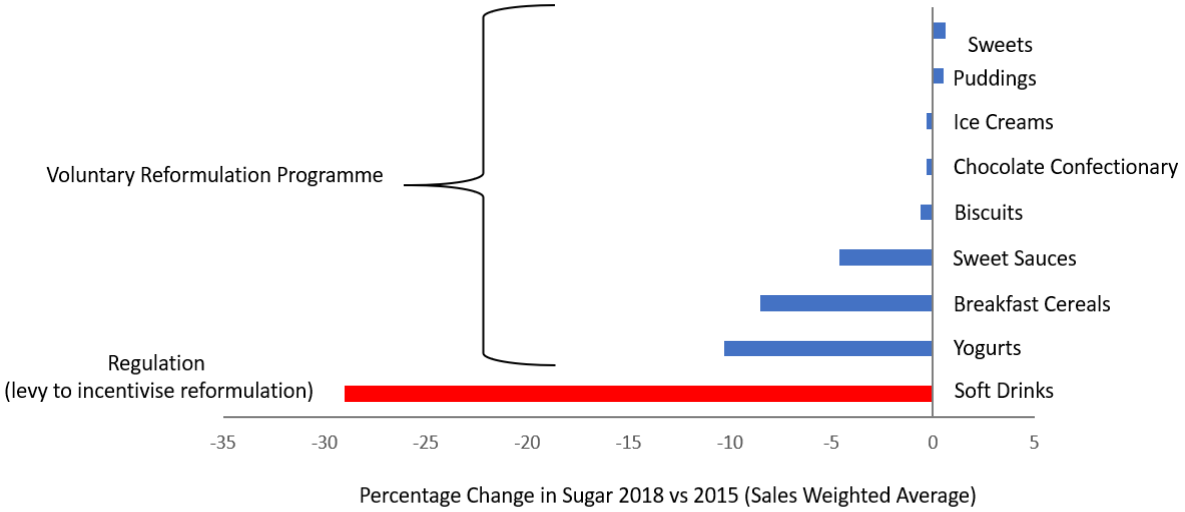
Regulation

In 2011 the UK government embarked on an ambitious and voluntary 'responsibility deal' with the food industry, asking the industry to do more to ensure people had healthy options. Despite good engagement from large parts of the industry, it failed.[6] In contrast, the Soft Drinks Industry Levy, a tax on the manufacturers of sugary drinks based on the sugar content of their products, has led to significant change. The levy was announced in 2016 and introduced in 2018. Between 2015 and 2018, the amount of sugar in soft drinks fell by 29% compared to minimal changes for other products containing sugar, which were only subject to a voluntary programme (Figure 2).[7]

[37] Opportunities for being active have also decreased, and whilst these are important for health and obesity, they are not the dominant factor leading to a rise in obesity.[32]

Food production, marketing and sale is highly regulated. But the focus of this regulation is 'food safety', preventing contamination of food with microbes or harmful toxins. Today, food poisoning causes 500 deaths each year,[8] or 0.1% of all deaths, in the UK. In contrast, poor quality diets contribute to many of the major, and often preventable, causes of death and disability in the UK, such as heart disease, stroke, some cancers, dementia and type 2 diabetes, as well as obesity. Taken together poor diet accounts for 15% of all deaths in the UK, 150 times the burden of food poisoning, and 8% of disability adjusted life years lost.[9] This is greater burden of illness than smoking, or any other single risk factor.[10]

Fig 2: Regulation can be more effective than voluntary measures: changes in sugar content of different foods between 2015 and 2018



Source: Sugar Reduction Report on Progress 2015 to 2018, Public Health England.[7] A levy on soft drinks was announced in 2016, and implemented in April 2018. From 2016 onwards Public Health England has led a voluntary programme of sugar reduction focused on the main contributors of sugar to people's diet.

The Healthy Food Act

There is growing evidence linking certain foods, such as sugary drinks, sweet desserts and crisps, to poor health.[11] As well as growing evidence linking the retail and marketing tactics to excess consumption of these products. A new act is needed*, the Healthy Food Act*, that mirrors the Food Safety Act. Changes in the law have been a very effective means to improve the public's health. In the UK, smoke free legislation, the soft drinks industry levy and minimum unit pricing on alcohol, all examples of legislative actions to achieve public health goals, were recently cited as amongst the top five public health achievement of the 21st century.[12]

Like the Clean Air Act (1956) and the Food Safety Act (1990), the Act should seek to catalyse widespread change and include a broad suite of measures. When trying to increase sales, food companies focus on the four 'Ps' of marketing (product, price, place and promotion). Companies seek synergies between these approaches, for example placing discounted products at the checkout. If one approach is blocked, for example if price discounts was restricted, they might

compensate by making greater use of other approaches, using advertising and placing products on the end of isle. To be effective, the Act needs to address all four aspects simultaneously.

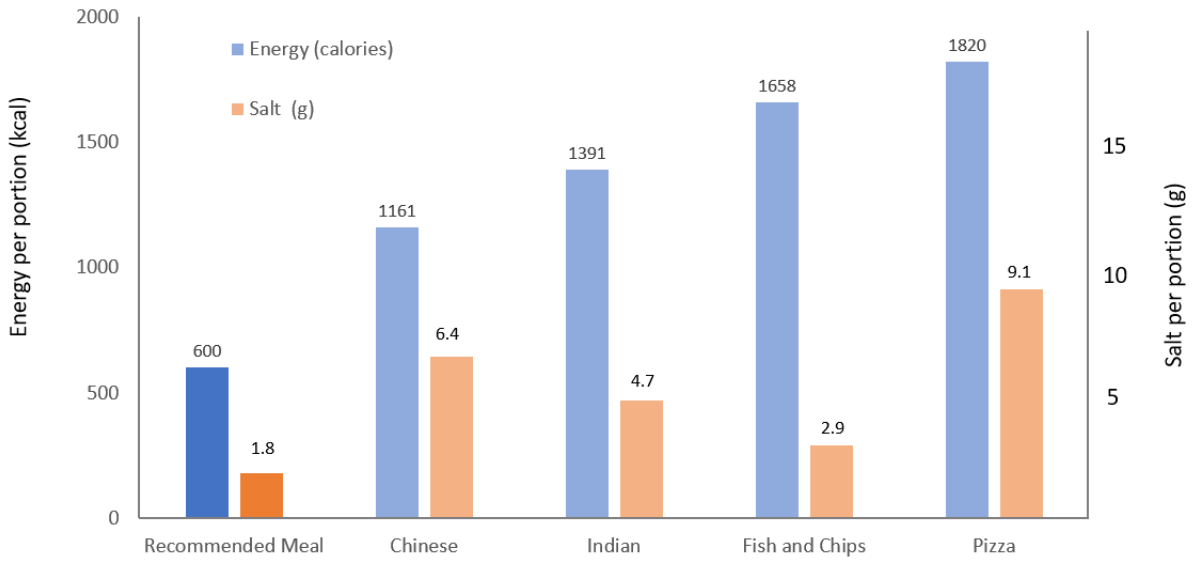
Such an approach would avoid the unhelpful focus on single measures. Focusing on single measures, reflecting a reductionist approach to science, may be ineffective and result in slow progress. It is akin to focusing on a single sandbag, when the flood can only be held back by a wall of sandbags. Likewise, the most effective intervention for heart attack is a timely referral to a specialist hospital (enabling assessment, treatment and rehabilitation). Reducing the question to a comparison of aspirin, clot busting drugs or surgery to open a blocked artery, can be unhelpful.

A strong set of measures across the four Ps will send a strong signal to the food industry. Currently, it is relatively easy to make money from selling unhealthy food, yet hard to make money from selling healthy food. The Act should change that balance, so that businesses that act to support the health of their customers are incentivised, not penalised. A broad set of measures will have greater credibility with the public. They recognise that individual measures alone will not be enough.

Product

Large portion sizes encourage people to consume more food.[13] Portion sizes have increased overtime.[14] For example, the average pizza sold in a supermarket has increased from 200g in 1990 to 305g in 2019.[15] Many portion sizes, particularly those sold in the out of home sector far exceed recommended levels of salt and calories (Figure 3).

Fig 3. Takeaway meals are high in calories and salt: the average calorie and salt content of takeaway meals surveyed in Liverpool



Source: Based on a sample of 489 takeaway meals in Liverpool, 2014.[16] Public Health England recommend 600kcal for a meal. Recommended salt intake is less than 6g per person, which equates to 1.8g for a meal.

The Act should ensure that food is sold in appropriately sized portions with clear information on calorie content. There should be a 'calorie cap' to prevent the sale of excessively large portions, and caps for other key nutrients, such as salt and sugar. Some manufacturer and retailers are adopting a responsible approach to portion sizes and information. This needs to be universal, which will require legislation.

Proposals by the previous government to introduce calorie labelling for the out of home sector were likely to exclude small businesses.[17] They should not be excluded. Most takeaway outlets are small businesses and not part of a major chain. McDonalds, one of the major fast food outlets in the UK has 1250 franchise in the UK,[18] only 2% of the 60,000 takeaway outlets in the UK. The introduction of standard sized boxes for takeaway outlets could be a means to introduce an effective calorie cap as well as provide portion standardisation to give indicative calorie information for small businesses.[19] Takeaways are more commonly found in more deprived neighbourhoods.[20] Effective action on portion sizes can be expected to reduce health inequalities.

There should be consistent and minimum standards for the nutritional labelling of food (e.g. standardised traffic light labels) and calorie labelling. Calorie labelling and nutrition labelling may be relatively weak tools to change individual's purchasing behaviour.[21] Only a minority of customers read, process, understand and use the information. However, they do appear to be effective at encouraging manufacturers to reformulate their products.[22] Their adoption outside the home, would also permit much greater monitoring and understanding of practices outside the home.

There should also be clear and standardised guidance on portion sizes for products, such as breakfast cereals that are sold in large packets. Leaving the European Union, now gives the UK the freedom to introduce uniform standards.

Just as food safety is a mandatory part of the training of chefs and others working in the food industry, the act should ensure that this extended to fully consider the role of food on human health.

Price

The use of price promotions, such as buy two for the price of one, has been shown to increase overall purchasing of food.[23] Price promotions are used much more heavily in the UK than other European countries. Around 40% of food purchased to consume at home is on a price promotion, compared with 20% in other European countries.[24] Germany and Denmark have prohibited price promotions for many years, instead favouring fixed unit pricing.[25] This is seen as fair and is popular with customers.

Other pricing structures also encourage people to overconsume food. Takeaway meals often encourage customers to buy larger portions by making larger meals look like better value, an additional 30% for a marginal increase in cost. Fixed unit pricing should be standard, so that a portion that is 30% bigger costs 30% more.

Placement

The placement of unhealthy products near checkouts should be prohibited in both food and non-food stores, like clothes shops and petrol stations. In supermarkets, these restrictions have been shown to successfully reduce the purchasing of these products.[26]

In shops the sale of food should be conditional on having a balanced display of all foods, with a minimum amount of shelf space being taken up by healthy food items, such as nuts, fruits, vegetables. The approach is being trialled in shops within NHS premises. This will ensure greater access to healthy options but would also be a major opportunity and incentive for business to innovate to provide healthy options.

Promotion

Promotion or advertising of unhealthy food has been shown to increase awareness of, preferences for, purchasing and consumption of unhealthy food.[27] For children a direct consequence of this exposure is eating more unhealthy food. Each additional advert seen, on average prompts a child to eat six more calories of food.[28,29] Whilst that may sound small, over time and collectively, it is estimated that this contributes to an additional 55,000 children with obesity (6.4% of all children with obesity).[29] Restricting advertising, particularly television advertising of unhealthy food to after the 9pm watershed, has significant potential to reduce these harms.[29] However, it may be relatively easy for advertisers to move these adverts online to circumvent these regulations. There is strong public support for greater restrictions on the advertising of unhealthy food, particularly when targeted at children.[15]

Children living in more deprived neighbourhoods tend to be more exposed to unhealthy food advertising on television. My work suggests that reductions in childhood obesity would be twice as great amongst children living in most deprived households compared to those in the least deprived.[29]

Lessons can be learnt from restrictions on tobacco advertising and sponsorship.[30] As restrictions were introduced tobacco, manufacturers looked to new routes to promote their products, such as sports sponsorship. Full restrictions took time. Television advertising of tobacco was banned in the UK in 1965, but a full ban on all advertising and sponsorship did not come into effect until 2005. The Act should bring in a set of advertising restrictions that apply across all media, as well as incorporating sporting and cultural events.

The current tax rebate on food advertising should be reviewed (advertising is currently treated as a business cost so can be offset against tax) for unhealthy food and should remain for advertising of healthy food.

Implementation

Like smoke free legislation some aspects of this legislation may be self-policing. Others, such as further television advertising restrictions on unhealthy foods, represent an extension of existing approaches so would have a minimal additional burden. Some of the legislation will require enforcement.

Every local authority employs a team of environmental health officers, who are responsible for the inspection of food premises to ensure food safety. Given the changing burden of disease, their role should be enhanced to include the issues outlined here. As with alcohol, any premise selling unhealthy food would have to formally apply for a license to the local authority. A system of licensing could be used to generate the revenue necessary to fund enforcement and might act as a barrier for non-food shops to sell food.

Many local authorities want to restrict the opening of new takeaway outlets,[31] but the current National Planning Framework is often too weak to enable them to do this. It is also applied inconsistently. The Act should give local authorities enhanced powers to control planning. Currently, the burden of proof, to show harm from a new takeaway outlet, is placed on the local authority. The burden of proof should be on the applicant to show that their restaurant will not cause additional harm.

Conclusion

The food available and how it is marketed is shaping what people eat and adversely affecting their health. This affects nearly everybody. A *Healthy Food Act* should be introduced to set minimum standards for how food is sold and marketed. This is important not just for Emma's health, but for everybody's health. The Act needs to be broad based to be effective. Done correctly, making the healthy option the normal option rather than merely providing information, it can also contribute to reducing the gap in health between the most and least affluent. Done correctly it will incentivise businesses to produce and market healthy foods.

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