Main body

Abstract

Local government organisations (LAs) have a major role in the prevention and treatment of obesity in England. This study aims to 1) understand what actions are being taken by LAs to address obesity, and 2) determine how actions counter the perceived causes of obesity when mapped against the Wider Determinants of Health (WDoH) model.

Thirty-two LAs were invited to complete an Action Mapping Tool, 10 participated. The tool requires LAs to document actions being implemented locally to address obesity. This then enables LAs to map their actions against the perceived causes of obesity, using the WDoH model as an analytical lens. We collated data from the 10 LAs and used an adapted framework synthesis method for analysis.

280 actions were documented across the 10 LAs; almost 60% (*n*=166) targeted Individual Lifestyle Factors (ILF), with 7.1% (*n*=20), 16.8% (*n*=47) and 16.4% (*n*=46) targeting Social and Community Factors (SCF), Living and Working Conditions (LWC) and Wider Conditions (WC) respectively. Conversely, 60% of causes were spread across the LWC and WC, with 16.4% regarded as ILF. Physical activity-, weight management-, and health improvement- programmes were most frequently implemented by LAs.

There is a stark mismatch between LA actions on obesity and its perceived causes. Given that LAs acknowledge the complex aetiology of obesity, an equally comprehensive approach should be implemented in the future.

Introduction

"The fact is that the conditions to which we are exposed influence our behaviour. Most of us cherish the notion of free choice, but our choices are constrained by the conditions in which we are born, grow, live, work and age." – Sir Michael Marmot [1]

In England, over 60% of adults and one third of children have overweight or obesity [2, 3]. The estimated direct cost of obesity on the National Health Service (NHS) is £6 billion per year, with indirect implications for the wider economy (i.e. absenteeism, productivity, disability adjusted life years, early retirement etc...), arguably underestimated, at £27 billion per year [4, 5]. Its aetiology is also multifaceted and complex. The 2007 Foresight report identified 108 factors – with over 300 interconnections – thought to cause obesity [4], with factors representing causes related to physiology, individual and social psychology, food production and consumption, individual physical activity (PA) and activity environments. Less well documented in the Foresight report are the wider determinants of health (WDoH), which create additional levels of complexity [6]. The WDoH are interchangeably referred to as social determinants of health [7]. Yet, these wider determinants have been extensively written about (in policy and research literature), and understood, prior to the commissioning of the Foresight report [8-10]. It is these determinants which drive the social inequalities that are present across society, with obesity being entangled in – and a by-product of – these complex adaptive systems [11]. Health, and obesity, are socially patterned [1-3].

The WDoH posit that obesity and health are products of the conditions in which we are born, grow, live, work and age [1]. The opportunities for good education, access to health care, transport and quality housing, and to gain employment collectively create the foundations for one's health [1, 8, 9, 12, 13]. In England, when stratifying the prevalence of childhood obesity by indices of multiple deprivation (a proxy measure of seven area-based domains, including income, education, quality of housing, and access to health care), twice as many children have obesity in the most deprived areas compared to the least deprived areas [2]. Dahlgren and Whitehead, in a seminal paper, conceptualised the WDoH model [6]; a socio-ecological model which illustrates the multiple layers that influence health. Five layers are documented: biological factors (BF), individual lifestyle factors (ILF), social and community factors (SCF), living and working conditions (LWC), and wider conditions (WC) - with the distal factors shaping the conditions and structures in which health behaviours are undertaken. The government commissions of the 1980 Black Report [8], the 1998 Acheson Report [9], and the 2010 Marmot Review [13] corroborate the implications of the wider determinants on health.

In 2013, the Public Health function in England was transferred from the NHS and into Local Authorities (LAs: i.e. local government organisations) [14]. LAs now play a central role in maintaining the health

of the English population. To support LAs in their endeavours, the Department for Health and Social Care distribute an annual grant of approximately £3 billion across the 152 LAs [15]. This grant is allocated on the premise that LAs deliver various mandatory public health services, including, but not limited to, sexual health services, children's services, health checks and the weighing and measuring of primary school age children. This leaves a plethora of non-mandatory health issues which include PA, drug and substance misuse, tobacco control, and obesity [16]. LAs decide how to spend their Public Health grant given their local circumstances and needs [15-16], meaning that some LAs spend no money on the prevention and treatment of obesity.

Although obesity is not a mandated priority, the 2016/2017 financial review of the Public Health grant reported that a collective £103 million was spent by LAs on addressing obesity [17]. There is also a strong discourse in England around the need for intervention at the level of the LA [18-21]. In the 2018 update of the central government childhood obesity plan [22], the trailblazer programme was announced; this set out the government's intention to understand how LAs can use their local levers to prevent and treat obesity and to identify best practice examples. Although central government can create nationwide policies (e.g. regulation, marketing and advertising, Diabetes Prevention Programme etc…), it is LAs who deliver actions tailored to local contexts and needs of their resident population. LAs have levers available which enable them to address the WDoH and the complex web of factors driving obesity; for example, through Transport, Housing, Planning, and Public Health sectors.

Whilst the approach to addressing childhood obesity is clearly documented at the central government level [22, 23], this is not the case at the LA level. This study therefore sets out to: 1) understand what actions are taken by LAs to address obesity, and 2) determine how these actions on obesity counter the perceived causes of obesity when mapped against the WDoH model. A secondary objective of this study is to introduce a tool to help LAs map their actions against the WDoH model.

Materials and Methods

Development of the Action Mapping Tool

An Action Mapping Tool was created by the research team as part of the Public Health England funded Whole Systems Obesity programme [24]. The tool (hosted in Microsoft Excel) allows LAs to systematically record information related to their actions on obesity, gathering data on: the name and description of the action, the anticipated outcomes, the associated key performance indicators, the sector responsible for its delivery, and whether the action was evidence informed. Additionally, the

tool enables LAs to critically reflect on actions in relation to the perceived causes of obesity, and consider these within the context of the WDoH [6].

The perceived causes of obesity were derived from two sources, through facilitated workshops with five LAs (approx. 20-50 participants per workshop) as part of the Whole Systems Obesity programmein 2016 (methodology attached in supplement 1), and from those included in the Foresight report [4]. Within workshops, LA stakeholders listed all the perceived local causes of obesity as part of a facilitated systems mapping exercise (*n*=448 listed). After removal of duplicate or unreadable causes, 155 remained. An additional 71 causes were noted in the Foresight report [4] which were not mentioned by the LAs. The 226 causes were independently coded by three researchers (JN, AC, MB) against the WDoH model layers, and discrepancies discussed until consensus reached. The list of 226 causes is available in supplement 1.

The Action Mapping Tool – and a guidance document to support its completion – will be publicly available in 2019.

Collecting LA actions on obesity

The Whole Systems Obesity programme team hosted an open-invite conference in summer 2017 for LA stakeholders (*n*=44 attendees). As part of the conference, all stakeholders (representing 32 LAs) were invited to pilot the first version of the Action Mapping Tool, and simultaneously, to participate in this study. Thirteen LAs expressed an interest in participating, 10 of which completed the tool between September 2017 and December 2017; the remaining three LAs stated that they had insufficient time to participate. The 10 LAs represent unitary councils (*n*=3), upper tier councils (*n*=2), lower tier councils (*n*=2), metropolitan borough councils (*n*=3), and a London borough council. In most instances, a senior member of the LA Public Health team co-ordinated the completion of the tool, distributing it to team members and affiliated organisations / sectors to obtain a comprehensive list of actions (note, the tool does not stipulate who the Action Mapping Tool should be shared with). Only the name and description of each action were required for this study.

Ethical approval for the collection and analysis of this data was granted by Leeds Beckett University Research Ethics Committee (*Ref*: 31211).

Analysing LA actions on obesity

The actions (name and descriptor) from the 10 LAs were pooled into one spreadsheet. Each action – based upon an assessment of the name and descriptor (as documented by LAs in the Action Mapping Tool) – was given two codes. Firstly, to gather a broad understanding of the actions, the lead researcher coded according to the type of action (e.g. ‘dance classes’, ‘walking football’, and ‘rugby

sessions' would be labelled as 'PA sessions'). This enabled the plethora of actions to be organised and described. Supplement 2 documents the types of action and provides examples for each. The second phase of coding was completed deductively by three researchers (JN, AC, MB) – all actions were coded against the WDoH model based upon an analysis of their description. Researchers were asked to consider the following question to facilitate coding: *who or what does this action aim to change?* The examples provided by Dahlgren and Whitehead [6], in both the WDoH model and the article, further aided coding. Coding discrepancies between researchers or uncertainties about the action descriptor were discussed until consensus was reached. This analytical approach enabled data to be both quantified and broadly described, and is consistent with the adapted framework synthesis method [25] – used by Johnston *et al*. [26] and Carey & Crammond [27]. The analysis stipulated that an action could only be coded into one of the five WDoH layers (i.e. BF, ILF, SCF, LWC, or WC). Four actions were deemed non-codable due to the absence of a descriptor.

Data were visualised in two ways, firstly using UCINet (social network analysis software [28]) to illustrate which actions were undertaken by the 10 LAs. Secondly, the actions were mapped against the WDoH model [6] and juxtaposed against 226 causes of obesity.

Results

Prevalence of Actions

A total of 280 actions were included in the analysis; ranging from 15 to 40 actions per LA (median: 30 actions). Sixty-five different types of action were identified (supplement 2 lists and describes the types of action); of these, 42 were delivered by two or more LAs (*n*=257 [91.7%] actions) and 23 actions were unique to individual LAs. The most commonly documented type of action included PA sessions (*n*=44), weight management programmes (*n*=26), health improvement programmes (*n*=16), open / green space management (*n*=9 citations), and mass participation PA events (*n*=9). Figure 1 illustrates how frequently the 65 types of action were delivered by the 10 LAs, delineating the actions which were undertaken by two or more LAs and on how many occasions.

[INSERT FIGURE 1 HERE]

Biological Factors (BF)

Twenty-two of the 226 causes (9.7%) included in the Action Mapping Tool were coded as BF within the WDoH model (see supplement 1 for the list of causes). Of note, most of these causes (18/22)

originated from Foresight as opposed to being identified by LAs. Only one action was coded as targeting BF; a LA referred individuals to bariatric surgery (coded as a type of weight management).

Individual Lifestyle Factors (ILF)

Thirty-seven causes (16.4%) in the Action Mapping Tool were coded as ILF; most of which were identified by LAs (*n*=23/37). Yet, when looking at the actions listed by the 10 LAs, almost six in ten (59.3%) focused on ILF. Weight management services – which directly aim to help individuals modify various lifestyle behaviours – were cited 25 times amongst nine LAs. A range of actions aimed to increase individual PA (e.g. group-based PA sessions [*n*=44 citations across 9 LAs], mass participation PA events [*n*=9 citations across 4 LAs], health walks [*n*=7 LAs], cycling proficiency training [*n*=6 LAs], exercise on referral [*n*=5 LAs], and active travel promotion [*n*=3 LAs]). Some targeted employee lifestyle behaviours through workplace wellbeing programmes (*n*=9 LAs), whilst six LAs (*n*=16 citations) utilised health improvement programmes to target a wide range of health issues (e.g. health literacy, wellbeing, stress management). Cooking classes were commissioned by seven LAs, and lastly, half of the LAs also referenced Change4Life campaigns which encourage individuals to make healthier choices in their daily lives. A range of other actions were cited less frequently (i.e. *n*<5 citations) which are noted in supplement 2.

Social and Community Factors (SCF)

Thirty-one causes in the Action Mapping Tool were coded as SCF (13.7%), five of which were unique to Foresight. Actions at this level were scant; with 20 (7.1%) being reported across LAs. These actions predominantly included breastfeeding peer support training (i.e. upskilling local community members to support new mothers) and community capacity development work (upskilling local community members in health-related topics). One LA had "community connectors" – trained community members that signpost neighbours onto relevant services, opportunities and peer support. Finally, a different LA provided health-focused community capital and development grants to local residents. No other actions were coded at the SCF level.

Living and Working Conditions (LWC)

The greatest distribution of causes (33.2%) from the Action Mapping Tool were coded at the LWC level; LAs identified 61 causes with Foresight providing a further 13. A small proportion of the actions (16.8%) were however seen to target LWC. The most frequently cited action at this level was active travel infrastructure (*n*=8 citations across 6 LAs) – notably, designated cycle lanes and walking routes which aim to reduce the number of short distance car journeys. The provision of active travel facilities (e.g. cycle storage, showers, shared bicycles) on the other hand were cited by three LAs. Five of the

LAs referred to having, or building, leisure centres as part of their obesity strategy. Three awards were also coded at this level; those aimed at school environments (e.g. healthy school award [*n*=4 citations across 2 LAs]), those aimed at fast food establishments (e.g. Healthy Catering Award [*n*=4 LAs]), and those aimed at workplace environments (*n*=3 LAs). Baby Friendly Initiatives, Making Every Contact Count (MECC) training, and school food plans – among others (supplement 2) were also coded at this level.

Wider Conditions (WC)

Forty-one of the 62 causes coded at the WC level were identified by the LAs. A similar number of actions were delivered by the 10 LAs at this level (*n*=46, 16.4%) when compared to the LWC (*n*=47, 16.8%). Common actions related to land use (e.g. open/green space management [*n*=9 citations across 7 LAs] and food growing/allotments [*n*=8 citations across 6 LAs]) and those seeking to improve the LA structures around health and obesity (e.g. Health in All Policies [*n*=7 citations across 5 LAs], multi-agency partnership working [*n*=4 citations across 3 LAs], aligned data sets [*n*=2 LAs], and Healthy Weight declarations [*n*=1 LA]). The National Child Measurement Programme – a mandated Public Health requirement for LAs to monitor the height and weight of children aged 4/5 and 10/11 years – was documented as an action by 5 of the 10 LAs. Actions which subsidise or provide food and/or PA were noted on numerous occasions (including Healthy Start vouchers).

[INSERT FIGURE 2 HERE]

Discussion

This study set out to document how a sample of LAs address obesity, and moreover, to map the actions against the perceived causes of obesity when characterised according to the WDoH. The results indicate that a large number of actions were delivered, with several similar types of action being consistent across the ten LAs. The most notable finding, however, comes to light when the 280 actions and the 226 causes were mapped against the WDoH model; 60% of the perceived causes of obesity were coded within the LWC and the WC, whilst 60% of action targeted ILFs – illustrating a clear mismatch. This finding reinforces and evidences the assumptions of others, that the complexity of obesity is often addressed through easily implementable, individual-level interventions [29-31].

The concept of the 'lifestyle drift' may help explain these contrasted findings [13, 30]. In our study, LAs identified causes of obesity, most of which, reside upstream in relation to the WDoH; denoting factors associated with social, economic and political processes (i.e. SCF, LWC, & WC). It is these factors which are thought to shape an individual's health, and similarly their weight, more so than the individual level health-related 'choices' that one makes [1, 8-10, 12, 13]. Yet despite LAs

acknowledging that the causes of obesity pool upstream, LA efforts tend to work downstream and target ILF – metaphorically pulling individuals out of the river. The lifestyle drift is a phenomenon often discussed, but seldom empirically evidenced, within the Public Health literature [33].

Nonetheless, LA colleagues acknowledge the complex aetiology of obesity – identifying many local perceived causes in addition to those evidenced in the Foresight report [6]. This raises the question as to why LAs approach obesity as they do. LAs are politically-led organisations with decisions often based upon the ability to evidence impact within short-term political cycles [11, 32]. These decisions also need to consider value for money, preferably with the financial returns benefitting the investing sector [33, 34]. The short-termism of local (and central) government may partly explain the preponderance of actions focused on individual lifestyle behaviours [18, 35]. These interventions are easily evaluated, and outcomes are often tangible; they can tick political boxes whilst maintaining minimal state interference (albeit that these interventions must then demonstrate favourable outcomes to maintain funding) [18, 20, 21, 36].

When scrutinising the actions further, most also align with a medicalised approach [37]; whereby actions target the proximal presenting risk factors (e.g. PA sessions target an individual's activity status and social prescribing targets a range of biopsychosocial issues) as opposed to the distal health shapers (e.g. the WDoH). This approach to current Public Health practice is thought, in part, to be a product of the 2012 Health and Social Care Act [14], in which the Public Health function transferred from the NHS into LAs, taking with it a clinical mindset. Research funding structures, and the evidence subsequently produced, disseminated and implemented, further perpetuates this medicalised model in a world rife with complexity [38, 39]. Between 2009 and 2016, more than 75% of National Institute for Health Research (NIHR) Public Health funding was allocated to downstream, short-term, individual-level interventions [38]. Alternative, system-wide approaches that include the involvement of funding bodies, are needed to move beyond this impasse.

The previous critique of downstream interventions and medicalised approaches is not to say that they are redundant. Johnston *et al*., [26], who employed a systems lens to evaluating national policies on obesity, stated that individual-level actions, if delivered in a co-ordinated manner, may collectively leverage change within an obesogenic system. For example, Minary *et al*., [40] references ParkRun, an intervention which aims to help individuals become more active, that impacted profoundly upon social norms (i.e. a WC determinant) through its wide scale engagement. Both Johnston *et al.* [26] and Finegood *et al.* [41] remind us that individuals' matter; many of the ILF actions in our analysis will be able to demonstrate meaningful improvements to an individual's biopsychosocial health. Our analysis should not detract from these ILF efforts, but instead should stimulate discussion about alternative

actions across the WDoH at deeper levels within the system [26]. Through the lens of a systems approach, an action would denote a concerted and intentional effort to alter the functioning of the obesogenic system. However, actions logged by LAs in the Action Mapping Tool tended to reflect tangible attempts to directly impact on the weight status and/or energy balance of an individual without consideration of the wider obesogenic system. A mindset shift is called upon.

The question now is how LAs move further upstream to address the WDoH. One answer may be through the use of a systems approach, characteristics of which have been cited throughout this discussion. These approaches enable multi-sector stakeholders (including political leaders) to gather a shared understanding of the obesogenic system, hence accounting for the WDoH and the upstream determinants. They also offer a framework for stakeholders to identify, refine and align actions (within their boundaries of influence) that aim to collectively alter the system's functioning [42, 43]. This therefore requires the expertise and input of the wider sectors (who can alter many elements within the SCF, the LW, and WC [42-46]) with Public Health acting as facilitative orchestrators. Lastly, systems approaches are adaptive in order to meet the demands of the ever-changing world in which we live [42, 47].

Implications for Practice

The Action Mapping Tool presented here, provides a framework for LA stakeholders to categorise and evaluate their actions against the WDoH model. The intention of the tool, although presenting a simplified depiction of a complex reality, is to visually highlight the balance between the perceived causes of obesity and the actions being taken to address it. The WDoH model challenges stakeholders to think more broadly about the causes of obesity, with the tool offering a means of moving actions upstream, to the conditions which cause obesity and other non-communicable diseases. The tool itself – when completed in full - will offer the greatest potential if used as part of a wider systems approach. Those completing the tool are required to think about the breadth of actions being undertaken locally, to identify other stakeholders who may be implementing these actions, to question what these actions aim to change, and to therefore maximise the impact of these actions through considering their collective coherence

Limitations

The analysis only accounts for ten LAs that wished to pilot the tool and may therefore constitute a sample of LAs who have a vested interest in addressing obesity. The actions undertaken by these LAs

may differ somewhat from those who have not engaged with the Whole Systems Obesity programme. The level of information provided by the LAs to describe their actions was variable, ranging from single sentences to a paragraph of text, which may impair accuracy when coding some actions. We did not request further information from LAs if their description was limited. Furthermore, given that we did not stipulate who should be involved when completing the tool, the actions logged by LAs may reflect their own commissioned activities whilst some may include actions undertaken by partner organisations (e.g. NHS). For the purpose of this study, we wanted to understand what LAs perceive the local actions to be, and to then analyse these through a WDoH lens.

As for the tool, whilst it makes no attempt to do so, it does not quantify reach or effectiveness of the actions, nor does it consider how an action may leverage change in multiple parts of the system (i.e. accounting for the interdependent nature of factors within a system). A limitation also valid for this study. The tool should cause stakeholders to reflect on their current approach, and then – as part of the Whole Systems Obesity framework (forthcoming, 2019 [48]) – provide stakeholders with a starting point for the development and implementation of a whole systems approach.

Conclusion

LAs are in a strong position to sculpt the architecture of the local systems; those which promote obesity and other non-communicable diseases. As observed in this study, LAs currently implement a raft of actions which they perceive to address obesity in their communities, however most do so by targeting individual lifestyle behaviours. Future efforts should look to re-orientate actions so that they also target the WDoH. This requires a paradigm shift not only in how LAs seek to address obesity, but also in how actions are conceptualised (i.e. a movement away from tangible downstream interventions), how actions are evaluated, and more broadly, how research funding is distributed. System leaders (which include LA stakeholders, their national counterparts, research councils, and academics) should to be brave and bold in pioneering and evaluating alternative approaches.

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Figures

Figure 1: Actions Undertaken by 10 LAs in England

The size of the circle represents the frequency by which an action is delivered, with the line width representing the frequency an action is delivered by any given LA. The larger the circle / wider the line, the more instances an action has been delivered.

Figure 2: Current Actions Mapped Against the Perceived Causes of Obesity

LA actions on obesity (right of the figure) can be contrast against the perceived causes of obesity (sourced from Foresight [2007] and five stakeholder workshops]. The Action Mapping Tool will enable LAs, and other organisations more broadly, to map their own actions against the causes of obesity. This should be used to reflect on the approach being taken in the context of the WDoH.