

Impact of a community-based pilot intervention to tackle childhood obesity: a 'whole-system approach' case study

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Abstract

Background

Go-Golborne was a 3-year pilot programme to test an innovative, community-based approach to preventing overweight in children in Golborne ward, London. This paper describes the findings of the evaluation of Go-Golborne. The evaluation uses a case study design, a theory of change approach and multiple methods to assess the effectiveness of the intervention according to a range of expected outcomes and with consideration to unanticipated outcomes. The RE-AIM framework is used to synthesise findings and examine public health impact.

Methods

Height/weight measurements of primary school children in the six participating primary schools were recorded each year for four years. For behavioural outcomes, children aged 6-11 completed four annual on-line surveys (with a total of 4331 responses). Parents were surveyed in year 1 and year 4 (177 responses). Three focus group discussions were held with children aged 10-11 (N=21); interviews were conducted with parents (N=11), and school representatives (N=4). For other intermediate outcomes, stakeholders were surveyed twice (37 responses), and interviews were conducted with key stakeholders (N=11). An extensive range of programme documents were reviewed and additional process data was collected from the programme team.

Results

Go-Golborne achieved excellent reach through the engagement of a diverse range of partners and schools. The proportion of children in the above healthy weight categories remained stable over time. A number of changes in home, school and neighbourhood environments to support healthy behaviour change were evidenced. There was some qualitative evidence of positive changes in children's behaviours, though significant or sustained changes were not evidenced by the quantitative data.

Conclusions

Go-Golborne is an example of a 'whole systems approach' to obesity at local level which helped stakeholders and parents to develop a shared commitment to improving healthy weight in children, to identify barriers to a healthy lifestyle, and to start to make changes in their services/behaviours. The campaigns and changes made at micro-level appeared to be insufficient, in the face of counteracting forces and personal factors, to achieve significant behaviour change within three years. This highlights the need for local initiatives to be reinforced by supporting action at regional, national and global levels.

Background

The Go-Golborne intervention was developed by the Royal Borough of Kensington and Chelsea's (RBKC) public health team to promote healthy lifestyles amongst children and families, as part of a broader

programme to tackle childhood obesity. A third of year six children across RBKC are overweight or obese, and prevalence is above the London and national averages in several of the most deprived wards [1, 2]. Variations in prevalence are strongly linked to income and socio-economic status; higher rates of obesity tend to be concentrated in areas with high levels of deprivation. The RBKC council chose to pilot a targeted approach to identifying and addressing barriers to a healthy lifestyle at a community level within Golborne ward: an area with a diverse population and relatively high deprivation and obesity prevalence. There were around 900 children living in the ward, and over 1,700 children attending six local schools [2].

There is a great deal of literature on behaviour modification or lifestyle change in the prevention and management of childhood obesity, influenced by several different theories, concepts and accounts of behaviour and behaviour change. Health behaviours are influenced by a range of socio-economic, cultural and environmental conditions, social and community networks and individual factors such as age and sex. Therefore, a combination of interventions that tackle population, community and individual-level factors are needed to help people change their behaviour in the longer term [3]. Systematic reviews of interventions and clinical guidelines indicate that successful interventions are complex and multi-component - aimed at changing both physical (or sedentary) activity and diet or healthy eating, and comprise multiple, potentially interacting methods of changing behaviour [4–8]. In general, interventions which involve the whole community in complex interventions that target environments and upstream determinants appear to be more effective than those which simply target children [7].

The increased recognition of the complexity of obesity causation and prevention, and a frustration with the lack of success of efforts over the last few decades, has led to a growing interest in whole systems approaches. Whole systems approaches seek to link together many of the influencing factors on obesity in a coordinated and integrated effort, across multiple sectors, to bring about change. Whilst community-based interventions seem to hold promise, there is a paucity of evidence on the effectiveness of community-wide programmes displaying features of a whole-system approach to prevent obesity. A systematic review published in 2014 that assessed the state of knowledge about the effectiveness of population-based whole of community interventions in preventing excessive population weight gain (searching databases from 1990–2011), identified eight trials, none of which were undertaken in the UK [9]. The review suggested that population-based, whole of community interventions can be effective in achieving modest reductions in population weight gain among children, but there is a paucity of evidence, particularly for the UK context. Since that review, there have been important additions to the evidence base, particularly from community-based childhood obesity prevention demonstration projects in Australia [10]. Experiences here in implementing a community-based intervention in different contexts and communities found that the effectiveness of intervention strategies is dependent on individual and community factors. This reinforces the call for a systems approach whereby existing systems are modified [10].

The language, theory and practice of whole systems approaches – certainly within the public health field - is still young. Understandings of how best to apply systems thinking and what a whole systems approach to obesity looks like in practice are newly emerging [11] and there is little knowledge yet of what

is most likely to work. However, recent evidence is encouraging, showing significant positive impact from whole systems programmes in, for example, Amsterdam [12] and Belgium [13].

Considering these developments, Go-Golborne was designed in 2014 and implemented over three years (2015–2018). It sought to engage all those with a role in shaping the environments in which children live, learn and play in Golborne. Its methodology and design are detailed in a separate paper [14], but key activities included: social marketing campaigns every six months, covering specific nutrition and physical activity themes; training and development opportunities for people working with children and families; the distribution and promotion of consistent messages on nutrition and physical activity; environmental improvements, working with council departments, local agencies and other stakeholders such as local retailers; and community development activities, including a grant scheme for each theme, local events and other ad hoc support. The high-level programme theory was that by engaging the whole community and stakeholders within the ward and across the council in a geographically-focused initiative, locally appropriate and co-developed activities would be designed and delivered to raise awareness and understanding of the issues, and encourage and support behaviour change amongst children and their families (see Theory of Change, Fig. 1).

Researchers at [name of institution withheld for blind review] were commissioned to design and conduct a robust research evaluation (from May 2015 to April 2019). This paper provides a summary of the overarching findings. A thorough analysis of the quantitative data, and a more detailed report of the process evaluation findings are available in separate articles (under review).

Methods

The evaluation was designed to answer questions associated with process, outcomes, and implications for future programmes and policy. It took a theory of change approach [15–18], which clarified the programme's aims, objectives and outcomes and articulated the assumptions underlying the programme's design (see Logic Model, Fig. 2). Data collection, management and analysis was guided by the RE-AIM framework [19], which focuses on essential programme elements (reach, efficacy, adoption, implementation, and maintenance) that can improve the sustainable adoption and implementation of evidence-based interventions.

Data was collected and analysed to measure programme reach, assess implementation fidelity, and examine programme context, from: 8 steering group meetings; 10 stakeholder group meetings; event log forms (completed by the programme team); progress reports; 8 newsletters; 3 in-depth interviews with the programme co-ordinator; and attendance records and other programme documentation.

A non-experimental case study design and mixed methods were used to evaluate a range of indicators, in accordance with the logic model, at baseline, mid-term and follow-up where possible. Data sources included:

- Height/weight measurements of all children in six primary schools each year from 2016 to 2019 (collected by the community health trust as an extension to the existing National Child Measurement Programme (NCMP));
- Child questionnaires (on-line, self-complete in classroom) with children in years two to six in the six schools: January-March each year from 2016 to 2019 (total responses = 4331);
- Parent questionnaires (self-complete on paper or on-line): early 2016 and early 2019 with parents of children in six primary schools (total responses = 177);
- Partner questionnaires (self-complete on-line): mid-2016 and mid-2018, with partner organisations (total responses = 37);
- Semi-structured interviews with school representatives: May-June 2018 (N=4);
- Semi-structured interviews with key stakeholders (representing various sectors): 2017 (N=8) and 2018 (N=3);
- Focus group discussions with purposive sample of year six children: 2018 (N=21, in 3 focus groups);
- Semi-structured interviews with parents: 2018 (N=6); and focus group with mothers at local children's centre (N=5);
- Other documentary information from the programme team.

A thorough review of all existing validated questionnaires identified none that would meet our objectives and be appropriate for primary school-aged children. All questionnaires therefore were collaboratively designed, pre-tested, piloted and refined by the evaluation and programme teams. Subject experts were consulted, and the survey structure and some specific questions were drawn from our review of existing validated questionnaires. The child questionnaire was designed to measure any significant change, over time, in the population health behaviours of children in Golborne. Questions were in a simple and suitable format, with embedded audio files and clear graphics to aid comprehension. Children in years 5 and 6 were asked fourteen additional questions taken directly from the Child Nutrition Questionnaire [20] to assess attitudes towards eating fruit and vegetables. The parent/carer questionnaire collected additional information on children's behaviours, assessed parent awareness and knowledge around key themes, and assessed parents' behaviours in relation to supporting healthy eating/activity in their children. The partner questionnaire explored the support partners received from the Go-Golborne team, the extent of partner engagement, how information was being received and used, whether capacity had been strengthened, and whether community partners were doing anything new or different to support children in making positive behaviour changes.

All data sources were analysed separately according to their methodological requirements. Survey data were analysed using statistical analysis (SPSS version 25). Outliers were removed and descriptive statistics computed. For data generated from the Child Nutrition Questionnaire, answers were provided on a five-point scale from 1 'strongly agree' to 5 'strongly disagree', with higher scores indicating a more negative attitude towards fruit and vegetables, and lower scores indicating a more positive attitude. Example questions include: 'Eating vegetables makes me feel healthy' and 'I like the taste of most fruit'.

Cronbach's alpha for subscales on attitudes to fruit and vegetables indicated good reliability (fruit $\alpha = .81$ veg, $\alpha = .94$). A Linear Mixed-Effects Model (LMM) analysis was conducted to explore potential differences in mean scores. The standard level of significance ($p < .05$) was used to examine patterns in the data from 2016 to 2019.

Height and weight data for school years one to five were combined with the routine NCMP dataset to add in Reception and year six. For the extended NCMP data, the LMS Growth tool was used to calculate BMI, BMI Standard Deviation (z-score) and BMI percentile based on sex, date of birth, date of measurement and height and weight values [21]. Weight classifications were determined using the UK90 BMI reference curves [22]. For routine NCMP the validated percentiles as provided by Public Health England were used (LMS results in the same BMI groups for these measures). For clinical BMI groups the following centiles were used as cut-offs: underweight: ≤ 2.3 , healthy weight: 2.4 to < 90.9 , overweight 90.9 and over, very overweight 97.7 and over. The analysis consisted of a series of pupil counts under different variables, e.g. by BMI classification.

Qualitative data was analysed using thematic analysis [23]. For the overarching analysis across data sets, all data were reduced to a series of thematic statements, organised using analytic templates for each data source. Prominent and recurring themes from across the data were then extracted, matched and cross-compared to develop an explanatory case for the propositions at the heart of the Go-Golborne programme [24]. A close link to the data was maintained throughout to ensure analysis remained grounded in the data, and to ensure that a range of data sources contributed to building explanatory models. Rival explanations were also sought and interrogated.

Results

This section presents a summary of the main evaluation findings in relation to the elements in the RE-AIM framework.

Reach

The Go-Golborne events were attended by over 3360 local children and families, with the most popular events attracting more than 1000 participants. This represents excellent reach into the community. Stakeholders praised the diverse range of partners that reflected the local community and offered greater relevance and reach. The involvement of all six primary schools enabled access to a large number of local children and families. Children and parents also engaged with Go-Golborne at after-school clubs and holiday activities. Parents with pre-school children had less contact with the programme content, though some recognised the logo through posters in the Children's Centre or park events.

Efficacy

Qualitative data suggested that children's knowledge about healthy foods improved over the course of the programme, and they now had an improved capability to make small changes in their dietary choices,

where supported. Stakeholders had noticed positive changes in knowledge/awareness amongst children, particularly related to certain Go-Golborne campaigns.

“I think it's had a really positive impact on the community; ... children are more aware of their healthy eating choices, they are aware of what they should eat and shouldn't eat”. (Statutory partner, interviewed 2017)

“My children... they love all the projects and they came home and kept talking about it and my son was like, 'oh mummy I'm not having a doughnut, because it contains so much sugar!'”. (Parent, interviewed 2017)

Key messages around physical activity do not appear to have been absorbed so readily by the children. There was a greater sense of decisions being outside of the children's control:

“... sometimes there's good stuff going on but then if you are busy or like I have younger brothers then you can't always go” (Child in Focus Group Discussion, 2018).

Parents reported that Go-Golborne had raised awareness of healthy eating and activity in a fun and enjoyable way, and had provided them with greater motivation to further support healthy choices for their children. The follow-up parent questionnaires, however, did not suggest an improvement in knowledge around key health-related recommendations.

Data from partners, parents, teachers and children appeared to suggest that attitudes amongst children and parents were shifting. Quantitative data gathered via the Child Nutrition Questionnaire (CNQ) (for years 5–6) identified a positive shift in attitudes (i.e. lower value scores on CNQ) towards eating fruit and vegetables across the four year period. The relationship between cohort and attitudes towards vegetables showed significant variance in intercepts across participants, $\text{var}(u_{0j}) = 2.65$, $X^2(9) = 130.18$, $p < .01$. Results from the LMM suggest that attitudes in 2019 ($M = 6.56$, $SD = 3.70$) towards vegetables improved compared to at the start of Go Golborne in 2016 ($M = 15.17$, $SD = 3.58$), $F(3,778.77) = 236.14$, $p < .01$, (CI 95% = 4.89, 5.83).

The relationship between cohort and attitudes towards fruit also showed significant variance in intercepts across participants, $\text{var}(u_{0j}) = 3.54$, $X^2(9) = 184.12$, $p < .01$. Results from the LMM suggest that attitudes in 2019 ($M = 6.64$, $SD = 3.08$) towards fruit improved compared to levels in 2016 ($M = 17.53$, $SD = 3.08$), $F(3,721.16) = 1201.94$, $p < .01$, (CI 95% = 9.95, 10.76).

The child questionnaire did not collect information on attitudes towards physical activity (due to the need to keep the length manageable), but rather focused on measuring changes in behaviour. Qualitative data highlighted that children associated physical activity with having fun and socialising with friends, rather than 'being healthy'. However, having fun and socialising was also closely linked to the use of electronic devices. Other children, who appeared to enjoy more physical activity, pointed to the barriers to taking part and the lack of opportunities, both in school and out.

Partners reported that their collaboration with Go-Golborne improved their reach into schools or community settings, increased the creativity and relevance of the messages they delivered, and linked the campaign messages to their own frameworks. They reported making many useful new contacts, and benefiting from participating in Go-Golborne events through an increased awareness of local services. Responses to the stakeholder questionnaire highlighted, for example, new collaborations between different organisations and groups. Training provided by the programme enabled local staff members to feel more confident in delivering consistent messages about health and weight when working with families. Most partners felt the programme improved their ability to support healthy lifestyles in the community, e.g. through developing new skills or knowledge around supporting children and families.

The majority of parents responding to the 2019 questionnaire reported making positive changes to improve their children's diet, increase the amount of physical activity, and decrease the amount of screen time their children engaged in. For example: 49% of parents responding to the survey reported making changes to reduce sugar (with cutting down on sweets and/or sugary snacks and having smaller portions of sugary foods/drinks being the most frequently cited examples), 56% to reduce salty/fatty snacks and 60% to increase fruit and vegetable consumption; 46% of parents reported making changes to be more active in travel to/from school; and 50% of parents reported making changes to reduce screen time. Partners and teachers reported seeing some of these changes beginning to happen, although they highlighted that there was still much progress to be made, that some families needed more support than others, and that there was a need to keep the momentum going.

Schools and local community venues/services were starting to make positive changes to support healthier diets and activity. Many different examples of changes were mentioned by organisations, including swapping the snacks and drinks provided for healthier alternatives, promoting healthier vending machines, organising and promoting walks and bike rides, creating and promoting new ways of encouraging active play, and running non-screen sessions during holiday times. Children, parents and partners referred to the changes that they had seen in local shops and venues, with, for example, some noticing a shift towards healthier options being available in shops and greater visibility of fruit and vegetables at street level. Teachers also detailed the continued and additional ways in which they were making healthier choices easier in school by, for example, having easy access to drinking water, offering active after school clubs, and providing fruit/vegetable snacks to key stage two pupils. These positive changes were being noticed by parents, with the majority of those responding to the 2019 survey agreeing that their child's school actively supports healthy eating and active movement.

In the second stakeholder questionnaire, partners described a higher uptake of local activities – both those facilitated by their own organisation and those in other settings (e.g. local leisure centres), and there were increased referrals to child healthy weight services.

Across the six behaviour change themes, there was little quantitative evidence from the surveys of positive, sustained shifts in children's behaviours. Most behaviours fluctuated across the four cohorts. The parent questionnaires also confirmed that there was much progress to be made in improving

children's behaviours to meet recommended levels. For example, in 2019, 65% of responding parents thought their child ate fewer than the recommended 5 a day; only 16% of parents said their child took part in vigorous activity on five days or more; and 27% of parents reported that their youngest child engages in two or more hours of screen time on a typical school day (60% on a typical weekend day). The behaviour change data is reported in full elsewhere (under review).

However, qualitative data suggested some positive shifts in behaviours. For example, partners reported that parents no longer brought sweet snacks or drinks to the activity sessions; and local shops and businesses reported fewer children buying sweets where partners had banned unhealthy snacks.

The data collected on children's heights and weights indicated that the proportion of children in the 'healthy weight' category (according to BMI centiles) remained stable, with no statistically significant change over the four-year time period. The proportion of children in the 'overweight' and 'very overweight' categories also remained stable.

Adoption

The Go-Golborne partnership comprised 110 organisations and businesses, including schools, nurseries, community centres, mosques, market traders and corner shops. A small core of partners (six to nine organisation representatives, including a local councillor) met as the Steering Committee eight times during the programme. A larger stakeholder group, averaging 25 attendees, met ten times during the programme. In total, over 100 stakeholder partners representing at least 62 organisations attended at least once. Organisations included those from the third sector, Council departments, health and leisure partners and others, which brought a diversity of local knowledge, contacts and expertise to the table. Partners were also engaged through training sessions, small grants delivery, use and dissemination of resources, and in the planning and delivery of events. Between six and twenty-five agencies were involved in each of the community events.

Implementation

The six themed community-wide social marketing campaigns formed the backbone of Go-Golborne's multi-strategy approach. Around this backbone, implementation was flexible to adapt to changing circumstances and to lessons learned. This adaptability proved to be of crucial importance: first, when due to cut-backs five months in, programme staffing was significantly reduced (the full-time communication and engagement officer was cut to minimal communications support), and second, when in June 2017, the Golborne community was rocked by the tragic fire at the neighbouring Grenfell Tower. The event and its aftermath traumatised members of the local community, stretched local services, took a great deal of focus and attention, and damaged relationships, particularly between the community and the Council. The Go-Golborne staff were extremely sensitive to this context. Despite some inevitable implications for programme delivery, all the campaigns largely ran as anticipated. Information was disseminated via 76,000 original health promotion resources; the majority of partners found the information to be highly trustworthy, relevant and useful. The seven community events were widely supported by partners and attended by the local community. The campaigns generated positive

messages to which stakeholders and community members responded well. Training was delivered to over 75 local staff/volunteers, with consistently high feedback. Many opportunities were provided for network-building and partnership development. Twenty-six partners received forty-four Go-Golborne grants to deliver activities related to the campaigns, and four schools used grants for theme-based activities. Stakeholders reported that Go-Golborne was responsive to local concerns, and aligned itself with existing/similar services and programmes, reducing the potential for overlap or unnecessary additional work, and helping to ensure that involvement was a positive experience.

Maintenance

Relationships forged in the early days of the programme were actively maintained throughout. The staggered delivery of the campaigns helped to ensure that partners could be engaged in each different theme, helping to keep their interest in the programme overall. The collaborative way in which campaign messages and resources were designed and delivered helped to ensure that they became embedded within the minds of many key change agents (such as those working with children), and institutionalised within some organisational practices and policies. The emphasis on simple messages, and realistic, achievable ideas increased the likelihood that elements of the programme would be adopted and maintained. As one partner commented:

“We’re going to maintain these things; we’re not going to change anything. I took all [the Go Golborne] banners, and we’ve got the Unplug and Play poster out in the playground as a constant reminder and [the programme has] left a legacy because we have all these great things in place. So like with me, I campaign for public health, for children’s health, so it will always be on the top of my agenda when it comes to outcomes for children – it will always stay, it’s fixed” (Go-Golborne Partner, interviewed 2018).

Discussion

Go-Golborne was developed as a pilot approach to identifying and addressing barriers to a healthy lifestyle at community level, and a potentially effective way of reducing child obesity. The challenge set by the council was ambitious. It aimed, within 3 years, to engage the whole community and stakeholders within the ward and across the council, to design and deliver locally appropriate and co-developed activities to raise awareness and understanding of the issues, and encourage and support behaviour change amongst children and their families. The scale and complexity of this challenge, and the importance of context in shaping the success of the programme, was acknowledged early on by the programme and evaluation teams.

The design and conduct of the evaluation was also fraught with challenges (see paper, forthcoming [details withheld for blind review]). The evaluation design sought to take account of the multiple programme components, action at multiple levels, the importance of context, the flexible and evolving nature of the programme, the breadth and long-term nature of the outcomes being pursued, and the absence of appropriate control groups for comparison purposes.[25, 26] The case study design enabled the integration of qualitative and quantitative data from a variety of sources to give an in-depth analysis

of the situation and the context. The evaluation provided a detailed picture of programme operations and resulted in a rich understanding of how and why programme operations related to outcomes. However, in the measuring of behaviour-related outcomes, the team were obliged for pragmatic reasons to rely on self-reported data, which has obvious limitations in terms of recall and social desirability bias. Moreover, since there were no existing tools that suited our purpose given the need to assess change across six behaviour change themes, the evaluation used bespoke (and therefore unvalidated) questionnaires. Low sample sizes from the parent surveys limited our ability to detect small intervention impacts and generalise the findings to the whole community. Another limitation is sampling bias (participation was voluntary). Behaviour data reported by young children should be treated with particular caution. Evaluation findings should be considered, therefore, with these caveats in mind.

In Golborne, throughout the programme period, data collected via child surveys indicated that children (at a population level) did not make significant changes to their eating and physical activity behaviours. This is perhaps unsurprising given the time-frame, the scale of the programme, the complexity of the issue, and the limitations in the evaluation methodology. However, similar findings, demonstrating inconsistent and limited success in changing healthy eating and physical activity-related behaviours, have been found in the evaluation of other comparable interventions.[10] As with the experience in Australia,[10] aspects of the local context were important in relation to the achievement of behaviour change objectives. In particular, many factors outside of the programme's sphere of control, such as the relative poverty of many Golborne residents and the Grenfell fire, affected both implementation and context.

Although population behaviours did not appear to change significantly, there was some evidence that a supportive environment was starting to be developed in Golborne's homes, schools and neighbourhoods. This was created by giving community stakeholders information, skills and motivation to support children in making healthy choices. The programme sought to raise awareness and knowledge of healthy eating and physical activity through social marketing campaigns, at the same time as making micro-environmental changes through informing, engaging and supporting a range of stakeholders. Evaluation data suggested that the raised awareness and knowledge brought about by the campaigns and the changes made at micro-level were not sufficient, in the face of counteracting forces in the meso- and macro-environmental levels, and personal factors such as degrees of self-control, self-efficacy and emotional coping, to achieve significant behaviour change.

However, Go-Golborne demonstrated that it is possible to bring stakeholders together to develop a shared commitment to tackling overweight, to recognise the part they can play, and to start to make changes in their services/behaviours. Community capacity to tackle overweight was strengthened in a number of ways in Golborne, including knowledge, skills, structures and opportunities. The programme strengthened and leveraged the interaction of human capital, organisational resources and social capital to help tackle child overweight as a collective problem. Most importantly, it did this in a way that strengthened community identity, built frameworks to facilitate sustainable change, and empowered the community through a strength-based approach and inclusive practice.

Whilst a shared commitment to changing children's behaviours was developed, the extent to which these notions of 'healthy living' were valued/prioritised depended a great deal on context. The evaluation highlighted many conflicting priorities for children, parents and other stakeholders. Children recognised that they faced many barriers to eating well and moving more, related to their family circumstances, and their school and wider environment. They raised issues such as safety and pollution, as well as individual factors such as being tired. Parents balanced the desire for their children to eat well and move more with other priorities related to finance, time, convenience and a concern for safety. Schools understood the relationships between health and attainment, but it was difficult not to be stifled by a lack of resources and distracted by the focus on inspection reports and test results. In the context of the tragic fire at Grenfell Tower, a wide range of issues related to inequity and mental health came to the fore which couldn't help but affect neighbouring Golborne. In this context, Go-Golborne not only managed to maintain its momentum throughout the period, but also demonstrated the value of its approach in terms of building trust, strengthening networks and reinforcing a community identity.

Go-Golborne aimed to take a 'whole systems' approach at a local level, which is consistent with a growing body of evidence and current thinking around how best to tackle obesity. A significant four-year action research project carried out during the same period as Go-Golborne, resulted in a 'whole systems approach to obesity' guide and resources, published in July 2019[11]. Using the guide as a framework of best practice, we conclude that Go-Golborne did an excellent job of implementing a 'whole systems approach' to obesity at a very local (ward) level. It secured senior-level support and established the necessary governance and resource structure to implement the approach; it built a compelling narrative and a shared understanding of why obesity matters locally and how it can be addressed; it brought stakeholders together to map the local system and agree a shared vision; it oversaw a number of collaborative and aligned actions; it maintained momentum by developing a stakeholder network; and it critically reflected on its approach and considered opportunities for strengthening the process. However, as a local community-centred project within a large borough, Go-Golborne placed more emphasis on Golborne-based actors and actions than on change within and driven by the Council. For improved impact, the Council should seek to scale up this systems approach to working across the whole borough – preferably in concert with a similar London-wide and indeed UK government-wide whole systems approach.

Conclusion

Go-Golborne represents an important attempt to implement an evidence-informed, community-based, whole systems approach to childhood obesity prevention in a deprived inner-city ward, within a local government context that is experiencing some of the tightest financial restrictions in recent history [27].

The findings from the evaluation of the Go-Golborne intervention demonstrate that this kind of approach can establish firm foundations for supporting healthier diet and physical activity related behaviours amongst children, through engaging children and their families, schools, and the wider community. The intervention helped stakeholders and parents to develop a shared commitment to tackling overweight, to

identify barriers to a healthy lifestyle, and to start to make changes in their services/behaviours. Key to this engagement was running a positive, fun and locally-tailored campaign with excellent reach into the community, broad adoption by partners, and flexible implementation plans that took account of the local context and adapted to changes and challenges. These foundations were deemed to be crucial for building trust (and therefore for acceptability of the intervention), and for maintaining the programme's momentum in the longer-term. However, the findings also highlight the complexity of and time taken to significantly alter population behaviours, and consequently weight status. The campaigns and changes made at micro-level appeared to be not sufficient, in the face of counteracting forces and personal factors, to achieve significant behaviour change within three years. This highlights first, the need for local initiatives to be reinforced by supporting action at regional, national and global levels, and second, the need for all initiatives to be seen as part of a longer term vision for childhood obesity prevention.

Declarations

Ethics approval and consent to participate

University of Kent Research Ethics Approval was granted prior to the start of the project (SRCEA 150). Head teachers were fully informed and provided written consent to the team to approach staff and parents/carers. Parents and children were fully informed and were given the opportunity to opt-out of survey completion. Children were also given the opportunity to decline to take part on the day the survey was conducted in schools. For qualitative interviews and focus groups, signed consent was obtained from both the head teacher and from parents/carers before approaching participants.

Consent for publication

Not applicable.

Availability of data and material

The data that support the findings of this study are available from Royal Borough of Kensington and Chelsea Council (RBKC) Public Health Team, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of RBKC.

Competing interests

None declared.

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Authors' contributions

EG led on the design of the work and on the analysis and interpretation of the data. SH led on the acquisition, analysis and interpretation of the quantitative data. TE led on the acquisition and analysis of the qualitative data. CL led on the analysis and interpretation of the children's height and weight measurement data. RM contributed substantially to the conception and design of the work.

All authors have approved the submitted version and have agreed both to be personally accountable for their own contributions and to ensure that questions related to the accuracy or integrity of any part of the work are appropriately investigated, resolved, and the resolution documented in the literature.

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Figures

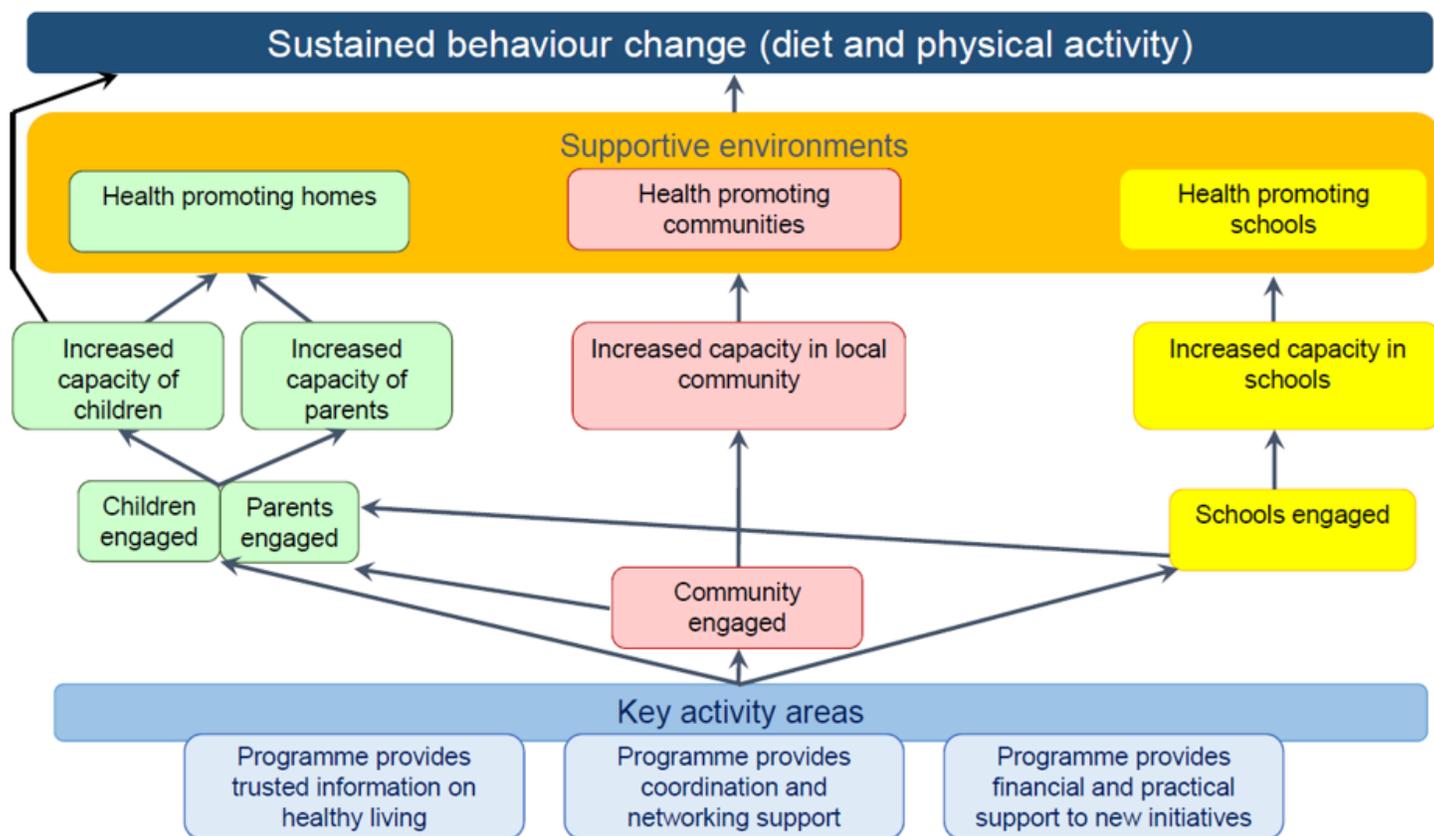


Figure 1

Theory of Change Diagram

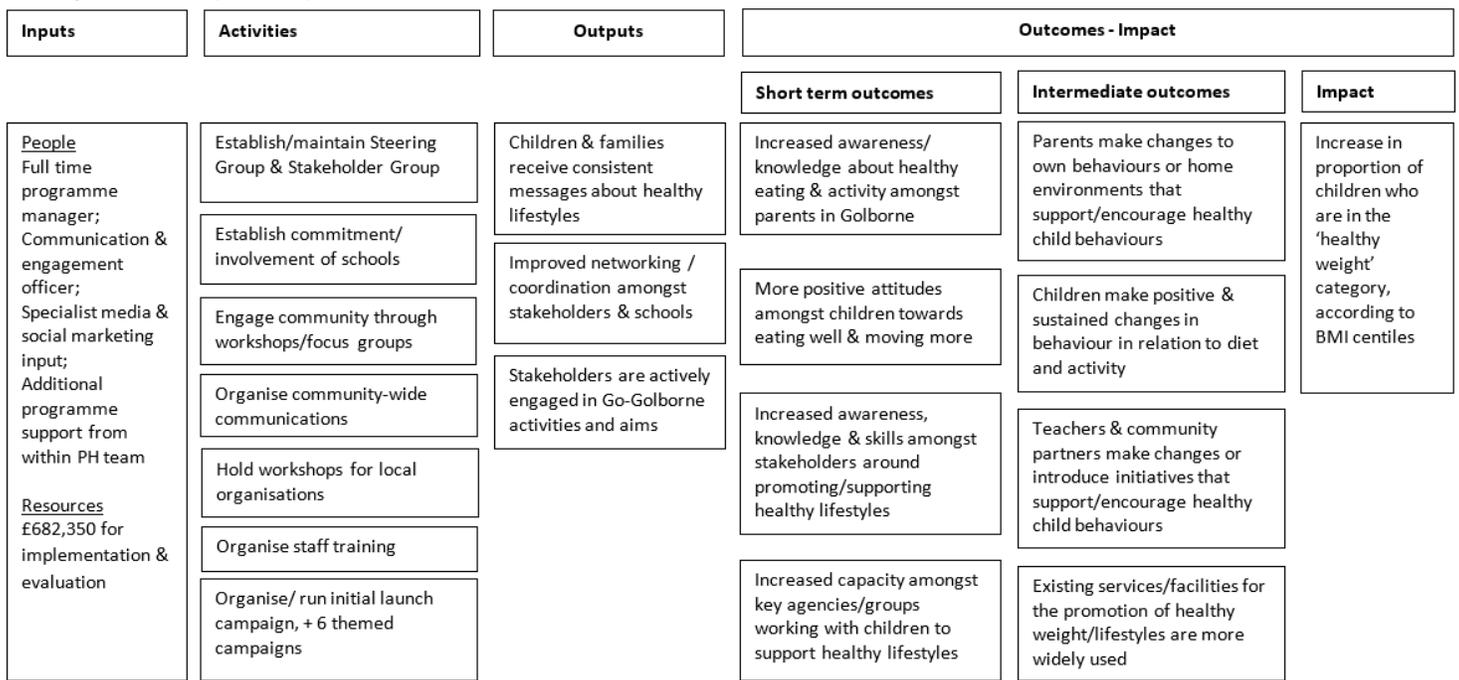


Figure 2

Logic Model of Go Golborne Programme