

Co-creating obesity prevention policies with youth: Policy ideas generated through the CO-CREATE project

Kaitlin Conway-Moore¹ | Cécile Knai¹  | Diane Finegood^{2,3} | Lee Johnston³ |
 Hannah Brinsden⁴ | Anaely Aguiar⁵  | Birgit Kopainsky⁵ | Furkan Önal⁵ |
 Arnfinn Helleve⁶  | Knut-Inge Klepp⁷  | Nanna Lien⁸  |
 Aleksandra Luszczynska⁹ | Ana Isabel Rito¹⁰ | Alfred Mestad Rønnestad¹¹ |
 Madeleine Ulstein¹¹ | Laurence Blanchard¹ | Natalie Savona¹²  | Harry Rutter¹³

¹Faculty of Public Health Policy, London School of Hygiene and Tropical Medicine, London, UK

²Biomedical Physiology and Kinesiology, Simon Fraser University, Vancouver, Canada

³Morris J. Wosk Centre for Dialogue, Simon Fraser University, Vancouver, Canada

⁴World Obesity Federation, London, UK

⁵System Dynamics Group, University of Bergen, Bergen, Norway

⁶Centre for Evaluation of Public Health Measures, Norwegian Institute of Public Health, Oslo, Norway

⁷Division of Mental and Physical Health, Norwegian Institute of Public Health, Oslo, Norway

⁸Department of Nutrition, Faculty of Medicine, University of Oslo, Oslo, Norway

⁹SWPS University of Social Sciences and Humanities, Wrocław, Poland

¹⁰National Institute of Health Dr. Ricardo Jorge, Lisbon, Portugal

¹¹PRESS – Save The Children Youth Norway, Oslo, Norway

¹²Cordis Bright, London, UK

¹³Department of Social and Policy Sciences, University of Bath, Bath, UK

Correspondence

Kaitlin Conway-Moore, Faculty of Public Health Policy, London School of Hygiene and Tropical Medicine, 15-17 Tavistock Place, London WC1H 9SH, UK.
 Email: kaitlin.conway@lshtm.ac.uk

Summary

Despite growing recognition of the importance of applying a systems lens to action on obesity, there has only been limited analysis of the extent to which this lens has actually been applied. The CO-CREATE project used a youth-led participatory action research approach to generate policy ideas towards the reduction of adolescent overweight and obesity across Europe. In order to assess the extent to which these youth-generated policy ideas take a systems approach, we analyzed them using the Intervention Level Framework (ILF). The ILF ascribes actions to one of five system levels, from *Structural Elements*, the least engaged with system change, up to *Paradigm*, which is the system's deepest held beliefs and thus the most difficult level at which to intervene. Of the 106 policy ideas generated by young people during the CO-CREATE project, 91 (86%) were categorized at the level of *Structural Elements*. This emphasis on operational rather than systems level responses echoes findings from a previous study on obesity strategies. Analyzing the distribution of systems level responses using the ILF has the potential to support more effective action on obesity by allowing identification of opportunities to strengthen systems level responses overall.

KEYWORDS

Intervention Level Framework, obesity, systems thinking, youth-generated policy

Abbreviations: CO-CREATE, Confronting obesity: Co-creating policy with youth; EU, European Union; ILF, Intervention Level Framework; OECD, Organization for Economic Cooperation and Development; UK, United Kingdom; YPAR, Youth-led Participatory Action Research.

This is an open access article under the terms of the [Creative Commons Attribution-NonCommercial](https://creativecommons.org/licenses/by-nc/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2023 The Authors. *Obesity Reviews* published by John Wiley & Sons Ltd on behalf of World Obesity Federation.

Funding information

Horizon 2020 Framework Programme,
Grant/Award Number: 774210

1 | INTRODUCTION

Overweight and obesity in adolescents is a pressing public health issue. Organization for Economic Cooperation and Development (OECD) data from 2018 indicate that nearly one in five 15-year-olds across Europe has overweight or obesity, a figure that has risen from one in six over the previous decade.¹ Furthermore, these outcomes are not distributed equally within society, demonstrating a socioeconomic gradient where those in lower income groups are at higher risk.² While adolescents are significantly affected by excessive weight and related behaviors, they also experience this in the context of living through a unique developmental stage, characterized by increased susceptibility to risk-taking, the establishment of identity, and desire for acceptance from peers, making the drivers of overweight and obesity in this age group particularly complex.^{3,4}

With this in mind, there is increasing recognition in policy development and the research that informs it of the need to incorporate youth perspectives in the policies and programs designed to address issues relevant to their cohort.⁵ A related publication by a number of this paper's co-authors⁶ reported that collaboration with youth as equitable partners, rather than as the subjects or recipients of policy or programs, yields a contextualized and practical approach to problem-solving and is an empowering process for the youth involved.⁷⁻⁹ Despite this, however, to date, the voice of adolescents remains greatly underrepresented in the policymaking process.⁵

The European Union-funded *Confronting obesity: co-creating policy with youth (CO-CREATE)* study aimed to develop youth-led policy ideas that could contribute to the prevention of overweight and obesity and the reduction of associated inequalities among adolescents across Europe (www.co-create.eu), and is described in detail elsewhere.¹⁰ The project was guided by an important systems thinking principle, namely, to construct an understanding of a complex problem such as adolescent obesity through multiple perspectives,¹¹ encouraging inclusion of voices from different segments of society,¹¹ and facilitating collaboration and co-production throughout the knowledge generation process.^{12,13} Grounded in a youth-led participatory action research (YPAR) approach,¹⁴ the project engaged adolescents (16–18 years old) in five European and one African country, with these young people taking on the role of project partners from the outset.^{15,16} Among CO-CREATE's included activities, Youth Alliances were established as facilitated forums where youth were engaged in a range of actions aimed at the development of policy ideas for tackling adolescent overweight and obesity, based on the contexts and behaviors they felt were most relevant to their age group.¹⁷ Through a highly collaborative process, these Youth Alliances generated a total of 106 policy ideas.

An important feature of a systems approach is an appreciation that actions can take place at different levels within a system. We used this concept to analyze the 106 policy ideas and provide an overview of the distribution of these ideas in relation to the system level at which they operate. This allowed us to assess the extent to which these

youth-generated policy ideas engaged with system change and strategic policy approaches for tackling adolescent overweight and obesity.¹⁸

2 | METHODS

2.1 | Generating youth-led obesity prevention policy ideas

A total of 15 Youth Alliances were formed between 2019 and 2021 in five European countries (i.e., the Netherlands, Norway, Poland, Portugal, and the United Kingdom), involving 199 adolescents.¹⁹ Each Youth Alliance operated independently, and thus, their processes for developing policy ideas may have differed slightly, but collaboration between the young people was common across all their activities. At the outset, groups were provided with information related to existing obesity prevention policies and programs in place across Europe, as well as the outcomes of previous CO-CREATE systems mapping workshops where adolescents had worked together to identify what they perceived as the key drivers of obesity in their age group.¹⁵⁻¹⁷ Preliminary policy ideas were discussed during early meetings of the Youth Alliances, and participants were encouraged to complete a policy form to help refine their ideas. This policy form included sections that encouraged youth to (1) define the problem they sought to address and why it was important; (2) outline the main goal of their policy and its specific objectives; (3) identify the target group for the policy and relevant stakeholders; (4) provide a summary of their policy and the steps required to implement it; (5) develop a schedule for implementation; (6) prepare a detailed budget; and (7) conduct a risk assessment for their policy. Policy ideas were then taken forward to a subsequent stage within the CO-CREATE project in which they were discussed in Dialogue Forums, a process of engagement between youth and wider stakeholders which has been described elsewhere.²⁰ Potential leverage points to activate policies were discussed within the context of these Dialogue Forums.

Alongside completion of the policy form, activities such as advocacy training, Photovoice,²¹ and surveying were used by the Youth Alliances to understand the different contexts within which their policies would operate and the local needs involved.²² Youth Alliance facilitators across participating countries also prioritized opportunities for capacity-building among the Youth Alliance members as a means to contribute to their idea development. This included organizing meetings with local public health officers where the Youth Alliance participants could learn more about existing health policies and initiatives happening in their communities, as well as connecting the Youth Alliance participants with key stakeholders (e.g., local and national-level policymakers, private sector business owners, and representatives from non-governmental organizations).¹⁷

From this process, a total of 106 youth-generated policy ideas were put forward by the groups. More specifically, the Norwegian Alliances proposed a total of 30 policy ideas, the Dutch Alliances 16, the Polish Alliances 27, the Portuguese Alliances 21, and the UK Alliances 12. For the purposes of this study, the full set of 106 policy ideas acts as our dataset, which will be applied post hoc against the Intervention Level Framework (ILF).

2.2 | The Intervention Level Framework

Initially developed by Malhi et al.²³ and popularized by Johnston et al.¹⁸ in 2014, the ILF is an important tool for operationalizing systems thinking towards solutions for complex health issues. Based on Donella Meadows' definition of a system as an interconnected set of elements that is organized towards a specific outcome or purpose,²⁴ the ILF distills Meadows' 12 steps at which to intervene in a system into five. In doing so, the ILF allows for the sorting of data from different sources in a way that is both consistent and highly replicable, while also stimulating thinking about what is required to achieve change within an existing system. Among the five mutually exclusive levels of the ILF framework are *Paradigm*, *Goals*, *System Structure*, *Feedback and Delays*, and *Structural Elements*, which can be thought of as ranging from the most difficult level of the system at which to intervene (*Paradigm*) to the easiest (*Structural Elements*). While other frameworks have been developed in this area, such as the Action Scales Model (ASM) by Nobles et al.,²⁵ the ILF was selected for use in this study due to its previous application in analyzing government-led obesity prevention strategies.

Full details of the ILF, including implications for intervention and policy design, can be seen in Table 1. In brief, the *Paradigm* level includes a system's most entrenched beliefs, acting as a source of the system's overarching goals, rules, and structures. While it can be very difficult to intervene at this level, it has the potential to be highly effective. An example of action at this level would include switching the focus of government economic and trade policy towards maximizing wellbeing rather than economic output. The *Goals* level includes targets rooted in the system's existing paradigm that, if achieved, could lead to wider paradigm shift, for example, by setting targets for transport systems that prioritize active travel over motorized transport, or establishing air quality targets that drive reductions in motor vehicle use. The *System Structure* level includes interconnections between system elements and subsystems. Actions taken at this level aim to alter existing linkages within the system or incorporate new elements in a way that shifts the system's structure. This might include measures such as the establishment of a cross-government committee to prioritize public health. The *Feedback and Delays* level includes aspects that allow the system to self-regulate, in particular by providing information about the outcomes of different possible actions to the sources of those actions. At this level, actions can result in the creation of new feedback loops within the system or the strengthening of existing loops with the potential for broader system restructuring, for example, mechanisms for monitoring sales of unhealthy products such as sugar-sweetened beverages,

and adjusting the level of duty levied on them in response to the findings. Lastly, the *Structural Elements* level consists of subsystems, actors, and the physical elements of the wider system. While this is the easiest level of the system at which to intervene, it often takes several combined actions at this level to result in any wider system change. Examples of this level include public information campaigns and the provision of brief interventions in primary care.

2.3 | Data analysis

Analyzing the youth-generated policy ideas in line with the ILF was done using an iterative approach. Three researchers (KCM, CK, and HR) began by independently assigning each policy idea generated by the Youth Alliances to one of the five levels of the ILF (i.e., *Paradigm*, *Goals*, *System Structure*, *Feedback and Delays*, and *Structural Elements*). In order to provide further nuance to each proposed idea, they were also categorized according to their broad thematic focus and the described setting in which they would be implemented. Following initial independent assignments, categorizations to each of the five levels were compared to identify disagreements, first between two researchers (KCM and CK) and then all three (KCM, CK, and HR). This was followed by a discussion with LJ and DF, two of the authors of the seminal paper implementing the ILF, in order to clarify the rationale for including data in any one of the five ILF categories. Based on this clarifying discussion, a final consensus was reached between the three original researchers (KCM, CK, and HR), with their agreed-upon rationale being uniformly applied across the full dataset of 106 policy ideas to ensure consistency and replicability.

3 | RESULTS

The full list of policy ideas generated by youth according to their Youth Alliance country, and coded by ILF level, thematic focus and setting are listed in Supporting Information S1. Table 2 presents the total number of Youth Alliance policy ideas that fell into each category of the ILF, along with representative examples. Overall, 86% of ideas ($n = 91$) aligned with the ILF's *Structural Elements* level due to their involvement of subsystems, actors, and physical elements within the existing system; 13% ($n = 14$) of the policy ideas were categorized at the ILF level of *Feedback and Delays* as they centered on providing information about the outcome of different actions back to the source of the actions; and 1% ($n = 1$) of the policy ideas aligned with the *Goals* level, as it involved reducing inequalities in income and other social outcomes, thus referring to a target whose achievement could lead to a paradigm shift. None of the policy ideas were coded at the ILF's *System Structure* or *Paradigm* levels.

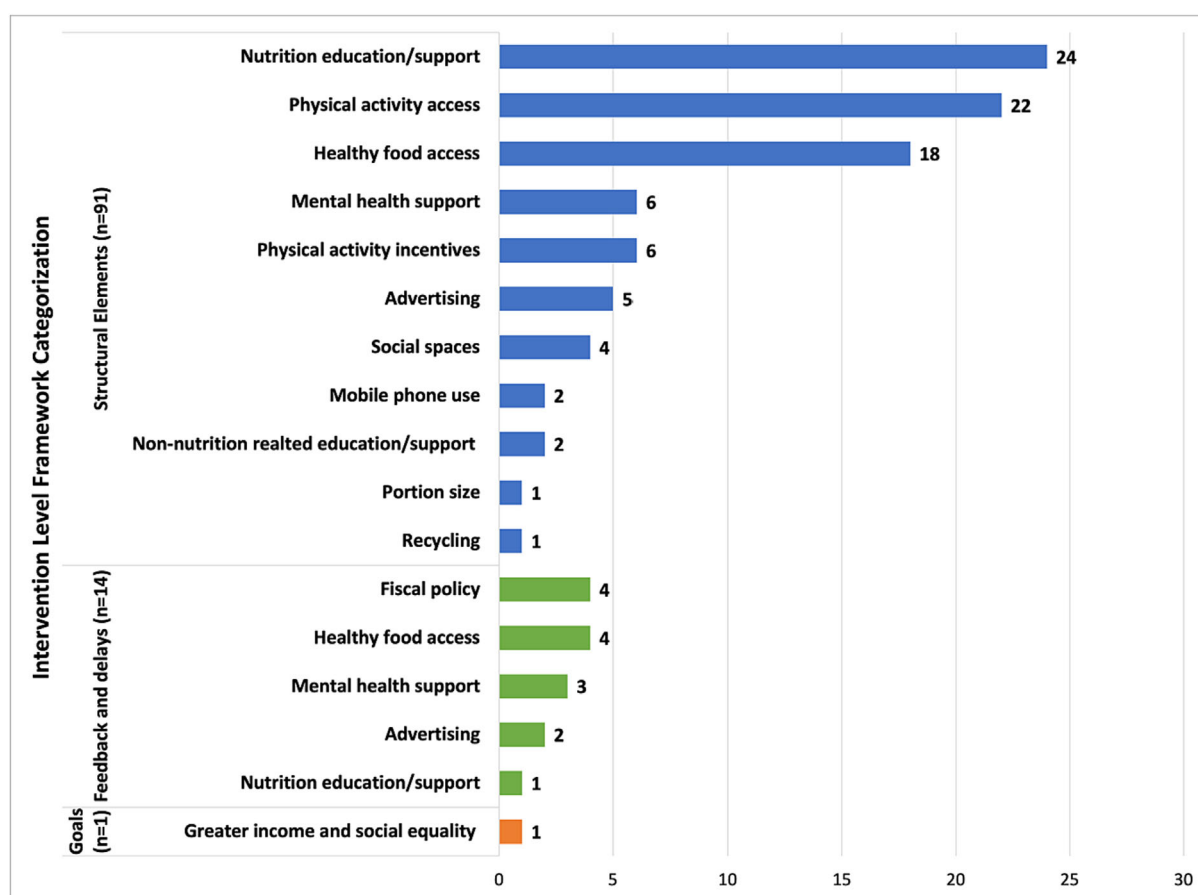
Figure 1 illustrates the 106 policy ideas in more detail, collated by theme and categorized according to the levels of the ILF. Among the 91 proposed ideas coded as *Structural Elements*, a majority focused on providing nutrition-related education and/or support to students and their families ($n = 24$). Key examples of these kinds of ideas included

TABLE 1 The Intervention Level Framework.

	Structural Elements	Feedback and Delays	System Structure	Goals	Paradigms
Intervention Level Framework rules (as per Johnston et al. ¹⁸ and Malhi et al. ²³)	The subsystems, actors, and the physical elements of the system, which may be connected through feedback loops and information flows. This is the easiest, though least effective, level at which to intervene, and therefore, many actions at this level are required to create system-wide change	The mechanisms by which the system regulates itself, by providing information about the outcome of different actions back to the source of the actions. It can be simple and direct or involve multiple variables. Actions at this level can create new feedback or increase gain around existing loops, and adding new feedback loops or changing feedback delays has the potential to restructure the system.	The interacting elements that make up the system as a whole, including the subsystems, actors, and interconnections between these elements. Actions at this level will shift the system structure by changing system linkages or incorporating novel elements. The system structure conforms to the system's goals and paradigms, and gives rise to the dynamic behavior of the system over time.	Targets that need to be achieved for the paradigm to shift, and they conform to the system's paradigm. Actions at this level focus or change the aim of the system.	The system's deepest held beliefs about the way the system works, and are the source of system goals, rules, and structures. Actions and ideas at this level propose to either shift or reinforce the current paradigm. It is very difficult to intervene at this level, but it can be very effective.
Implications for intervention and policy design (as per Johnston et al. ¹⁸)	Actions at this level are influenced by regional and local population needs, and the evidence and informants consulted. Elements can be assessed in light of higher-level activities to identify how they might support or be supported by them. A focus on elements helps to make sure all subsystems, actors and physical elements are given appropriate attention or align with stated goals and paradigms.	Actions at this level can include traditional outcome evaluation or reflect process-oriented goals. Planners may attempt to affect feedback loops within the system with lower level activities built in to encourage positive feedback. A focus on Feedback and Delays provides opportunities for innovation in evaluation design and use of indicators for monitoring.	Actions at this level emphasize information flow, knowledge transfer, and relationship building, and shifting material conditions across the system, such as influencing supply and demand.	Actions at this level encourage considering outcome goals in light of system influence, potential unintended consequences, and subjectivity to system Feedback and Delays, and considering process goals in terms of how they set targets for system behavior, push thinking about shifting norms and culture to produce healthier outcomes.	Actions at this level address the desired systems' underlying beliefs regarding health and its orientation towards solutions, and have the potential to guide day-to-day thinking, behaviors, and norms at other levels.

TABLE 2 CO-CREATE youth-generated policies according to the Intervention Level Framework.

	Structural Elements	Feedback and Delays	System Structure	Goals	Paradigms
Number of CO-CREATE policy ideas that fall into this category, and examples (see Supporting Information S1 for full list)	<i>n</i> = 91 (86%) A “15 min break” campaign to decrease mobile phone use during meals Decreasing the workload, both in schools and in adult jobs, which would give more time to be physically active High school students receive a monthly gym membership where they can train with a personal trainer once a month	<i>n</i> = 14 (13%) More focus on mental health and addressing poor eating habits due to poor mental health Applying a law that restricts the number of fast-food restaurants per area and prohibiting these types of restaurants close to schools	<i>n</i> = 0	<i>n</i> = 1 (1%) Even out wage differences and social differences	<i>n</i> = 0

**FIGURE 1** CO-CREATE youth-generated policy ideas by thematic focus and categorized according to the Intervention Level Framework (*n* = 106).

improving schools' nutrition-related curriculum, increased dietary advice for students either through teaching or with a dietician, as well as focusing on the quality of meals or cooking classes provided at school. Finally, some nutrition-focused ideas involved engaging directly with parents, for example, through take-home meal kits or special evenings to discuss meals and cooking. The issue of healthy food access (*n* = 18) was also quite popular as a suggestion and often

went beyond the school setting. For example, there were suggestions to improve fresh fruit and vegetable offerings at food banks, to make healthier foods more visible in retail settings, and to introduce discounts on healthy lunch options.

Better access to physical activity opportunities (*n* = 22) was also proposed and included ideas such as free or subsidized gym memberships and personal training opportunities for students, female-only

sports opportunities, and improvements to both the physical education options within schools and the physical environment within communities (e.g., improved bicycle paths). To a lesser extent, ideas at this level also centered on actions to improve mental health, such as by reducing student workloads and providing both peer and professional support, as well as rewards-based incentives for engaging in physical activity ($n = 6$ each). The introduction of local-level limits to unhealthy food advertisements and increases in healthy food advertising ($n = 5$); improvements to young people's social spaces ($n = 4$); limits to mobile phone (and particularly social media) use among adolescents and the provision of non-nutrition related education and/or support ($n = 2$ each); and changes to portion sizes and recycling processes ($n = 1$ each) were all also highlighted as important.

Among the ideas coded as ILF's *Feedback and Delays* ($n = 14$), suggestions included fiscal policy aimed at limiting procurement of unhealthy foods, including a sugar tax ($n = 4$); government-led initiatives to improve access to healthy foods in retail stores and restaurants, and laws to limit the number of fast-food restaurants in a given area ($n = 4$); greater attention paid by mental health professionals to relations between diet and mental health ($n = 3$); government-imposed limitations on the advertising of unhealthy commodities to young people ($n = 2$); and the use of imagery on product packaging as a tool to dissuade the consumption of unhealthy products ($n = 1$).

As seen in both Table 2 and Figure 1, only one of the Youth Alliances' policy ideas—which related to a reduction in income and social inequalities within society—was categorized as a *Goal*. None of

the policy ideas provided by the Youth Alliances were considered to fit within the System Structure or Paradigm levels of the ILF.

Figure 2 provides an overview of each of the 106 policy ideas by the described settings in which they would take place. Here, it can be seen that a large portion of the policy ideas ($n = 42$) revolved around the school environment, with a further 25 related to the locations where food is procured (i.e., restaurants and supermarkets), 19 to recreational and leisure spaces, 8 to social media, 7 to community spaces, and the rest (between $n = 3$ and $n = 1$) set within healthcare settings, workplaces, or wider society.

4 | DISCUSSION

In this study, we analyzed youth-generated policy ideas for adolescent obesity reduction from the CO-CREATE project in terms of the ILF. The primary value of an analysis such as this, and the application of a tool like the ILF, is not to provide a critique of the youth-generated policy ideas, which were grounded in the circumstances of their generation and directly related to the lived experiences and local contexts of the youth involved. It is, instead, to demonstrate that policies and actions can sit at different levels of a system and use this knowledge to stimulate discussion and examination of both the proposed policies themselves and what might be needed to achieve system change more broadly.

By way of illustration, the largest category of CO-CREATE youth-generated policy ideas focused on promoting healthy diets (see

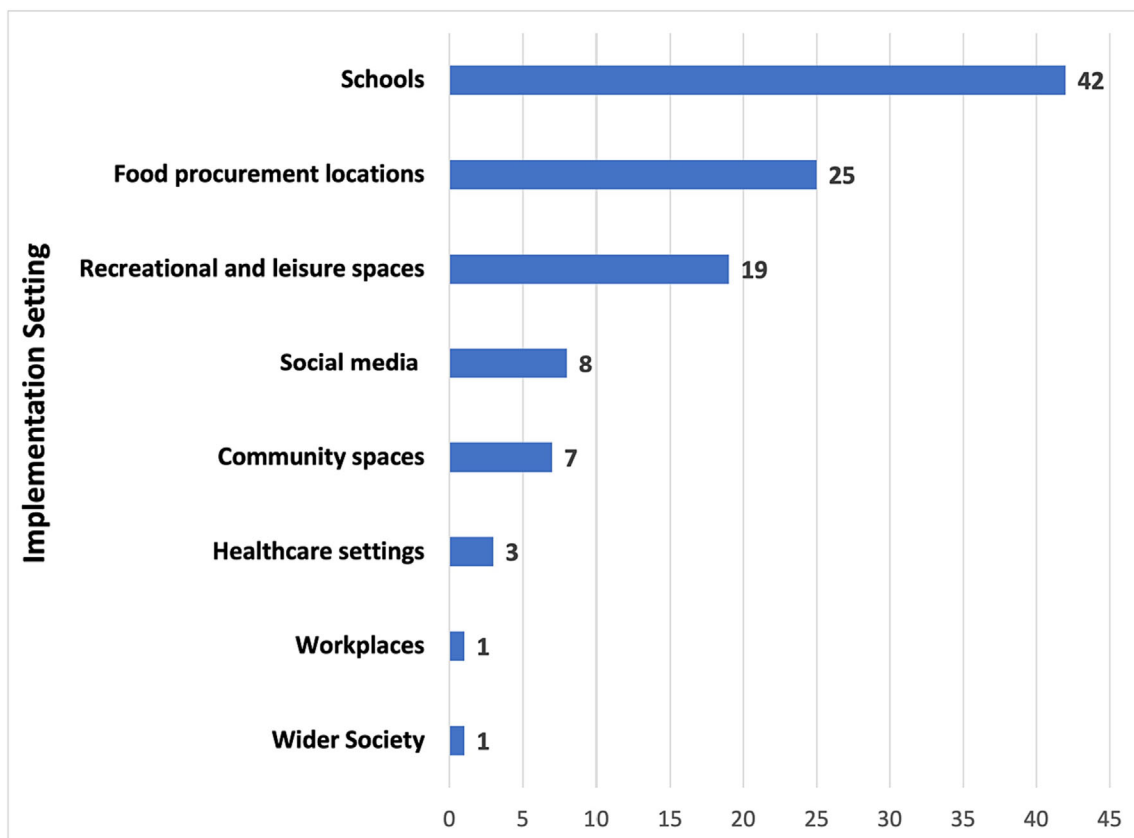


FIGURE 2 CO-CREATE youth-generated policy ideas by implementation setting ($n = 106$).

Figure 1). The dominant approach proposed by young people was the provision of nutrition education/support, an action that operates at the *Structural Elements* level. Achieving the desired outcome at the *Feedback and Delays* level might, for example, involve engaging young people in process and outcome evaluations of nutrition education and support. Action at the *System Structure* level might involve the establishment of joint working groups across education and health sectors to identify ways to improve young people's diets. One way to promote system change at the *Goals* level would be to establish targets for provision of healthy school food. Achieving change in the *Paradigm* of this system would be difficult but might, for example, involve redefining the purpose of the education system from a primary focus on learning to a broader emphasis on equipping young people with the skills and capacity for lifelong health and wellbeing.

The proposed policy ideas reviewed in this study provide evidence of the desire among young people to either lead or be directly involved in the processes that shape their diet and physical activity. This can be seen in the calls for more nutritional education and support, but also in the locating of many ideas within the school environment, and the multiple suggestions that involve collaboration between young people and their parents, teachers, and wider community. The wish to get involved in shaping decisions about their everyday environment aligns with our earlier work capturing young people's desire to shape policy,⁶ and their motivation to influence their immediate environment has also been documented by others. For example, Glover and Sumberg²⁶ outline the multiple ways in which young people engage with food systems to achieve their objectives and advance biophysical, economic, cultural, and social interests. Piscitelli and D'Uggento²⁷ echo these points in their study of young people's motivation and knowledge about working to address climate change, citing the school environment as a key setting given the amount of time most young people spend there. Though Glover and Sumberg²⁶ caution policymakers to capture youth voices at all opportunities, the authors also emphasize the importance of avoiding treating youth as a homogenous category and to acknowledge the challenges faced by young people.

Evidence of socioeconomic gradients in access to healthy food and physical activity facilities is well documented in the literature,^{28,29} with important knock-on effects for outcomes such as overweight and obesity. Action at the individual level has a tendency to widen health inequalities,³⁰ and it is important that public health prioritizes structural level responses.^{31,32} Systems approaches, and tools such as the ILF, support action at the structural level that reduces the likelihood of intervention-driven inequalities. Evidence of youth concern about inequalities emerges from the Youth Alliances' policy ideas, particularly in calls for expanded access to healthy foods and physical activity opportunities, either by offering them free of charge or with discounted student pricing. The large number of ideas that were generated related to these aspects ($n = 18$ for healthy foods and $n = 22$ for physical activity) may point to aspects of the current system that result in issues around equitable access, particularly when paired with the groups' suggested goal of reducing income and social inequalities within society.

It is of course not surprising that the young people who generated the ideas reviewed in this analysis focused primarily on the environments with which they are most familiar or the kinds of actions that relate most closely to their lived experience. This finding is also likely to have been accentuated by the fact that the Youth Alliances emphasized the value of identifying actionable policy ideas; given the huge challenges involved in shifting societal paradigms and goals, it was always likely that the young people involved would choose instead to concentrate on the kinds of actions that they felt to be achievable. Thus, part of the utility of the ILF in this context is that the analysis points to the need for guidance in systems thinking for stakeholders being drawn into policy conversations, as well as explicit conversations about the vision and values driving calls for action.

The strengths of this study include the focus on youth perspectives in the development of policy ideas, particularly given their lack of representation in this area to date. Another key strength lies in the use of the ILF, a tool that allows for an in-depth assessment of policy ideas in relation to the level of the system at which they operate and for strategies about what is required to achieve system change more broadly. Limitations include the fact that as this was a post hoc analysis of the youth-generated policies using the ILF, evidence of the effectiveness of different levels of system intervention was not part of the Youth Alliances' original policy development. Another limitation is that the views reported here are by no means comprehensive across all youth, given that they were produced within the confines of the CO-CREATE study and only include participants aged 16–18 years from five European countries. Finally, although three researchers independently coded each of the 106 policy ideas and underwent a process of discussion and agreement using the ILF framework, the application of such a framework is not an exact science but rather a useful lens through which to understand and assess the way different groups propose to address the pressing issue of obesity among young people. This allows the identification of gaps in terms of the system levels addressed, which could stimulate discussion of additional and alternative approaches.

5 | CONCLUSION

Despite evidence that structural actions tend to be more effective and equitable than simple, operational interventions, which often act at the individual level, responses to obesity tend to be dominated by the latter rather than the former. Tools such as the ILF, which can be used to assess the nature of the relation between an intervention and the system within which it operates, can support analysis of policies in terms of their potential impact at system level. Unsurprisingly, the young people involved in the CO-CREATE study echoed the emphasis on operational interventions to address obesity shown by most governments and focused on the kinds of actions and environments with which they are familiar. Effective action on obesity will require a broadening of these boundaries, both in terms of environments, and the potential for actions to amplify their impact through reshaping structural aspects of the food, physical activity, and other systems

that shape the energy balance-related behaviors of young people. The use of tools such as the ILF, which help to structure thinking about the system level at which actions operate, may help to promote this kind of wider approach.

ACKNOWLEDGMENTS

The CO-CREATE project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No. 774210. The content of this paper reflects only the authors' views, and the European Commission is not liable for any use that may be made of the information it contains.

CONFLICT OF INTEREST STATEMENT

All authors declare no conflict of interest.

ORCID

Cécile Knai  <https://orcid.org/0000-0001-6663-7379>

Anaely Aguiar  <https://orcid.org/0000-0002-2440-4785>

Arnfinn Helleve  <https://orcid.org/0000-0003-0650-6531>

Knut-Inge Klepp  <https://orcid.org/0000-0002-3181-6841>

Nanna Lien  <https://orcid.org/0000-0003-1486-4769>

Natalie Savona  <https://orcid.org/0000-0002-3006-3681>

REFERENCES

- OECD. Overweight and obesity among children and adolescents. Health at a Glance: Europe 2020: State of Health in the EU Cycle. Published 2023. <https://www.oecd-ilibrary.org/sites/7402dbb2-en/index.html?itemId=/content/component/7402dbb2-en>. Accessed April 27, 2023
- Adams J. Addressing socioeconomic inequalities in obesity: Democratizing access to resources for achieving and maintaining a healthy weight. *PLoS Med*. 2020;17(7):e1003243. doi:10.1371/journal.pmed.1003243
- Packer J, Croker H, Goddings AL, et al. Advertising and young people's critical reasoning abilities: systematic review and meta-analysis. *Pediatrics*. 2022;150(6):e2022057780. doi:10.1542/peds.2022-057780
- Blakemore SJ, Robbins TW. Decision-making in the adolescent brain. *Nat Neurosci*. 2012;15(9):1184-1191. doi:10.1038/nn.3177
- Partridge SR, Sim KA, Armaghanian N, Steinbeck KS, Cheng HL. Adolescence and young adulthood: an untapped window of opportunity for obesity prevention. *Public Health Res Pract*. 2022;32(3):3232223. doi:10.17061/PHRP3232223
- Macauley T, Rolker HB, Scherer M, et al. Youth participation in policy-making processes in the United Kingdom: a scoping review of the literature. *J Community Pract*. 2022;30(2):203-224. doi:10.1080/10705422.2022.2073308
- Horwath J, Kalyva E, Spyru S. "I want my experiences to make a difference" promoting participation in policy-making and service development by young people who have experienced violence. *Child Youth Serv Rev*. 2012;34(1):155-162. doi:10.1016/J.CHILDYOUTH.2011.09.012
- Kataria I, Fagan L. Securing a constituency-based approach for youth engagement in NCDs. *The Lancet*. 2019;393(10183):1788-1789. doi:10.1016/S0140-6736(19)30285-5
- Krenichyn K, Schaefer-Mcdaniel N, Clark H, Zeller-Berkman S. Pushing the boundaries: critical international perspectives on child and youth participation-focus on the United States and Canada, and Latin America. *Youth Environ*. 2007;17(2):594-615. doi:10.7721/chilyoutenvi.17.2.0594
- Klepp KI, Helleve A, Brinsden H, et al. Overweight and obesity prevention for and with adolescents: the "confronting obesity: co-creating policy with youth" (CO-CREATE) project. *Obes Rev*. 2023;24(S1):e13540. doi:10.1111/OBR.13540
- Sarriot EG, Kouletio M, Jahan DS, Rasul I, Musha A. Advancing the application of systems thinking in health: sustainability evaluation as learning and sense-making in a complex urban health system in Northern Bangladesh. *Health Res Policy Syst*. 2014;12(1):45. doi:10.1186/1478-4505-12-45
- Best A, Holmes B. Systems thinking, knowledge and action: towards better models and methods. *Evidence and Policy*. 2010;6(2):145-159. doi:10.1332/174426410X502284
- Knai C, Savona N, Finegood D, et al. Learning from the CO-CREATE project: A protocol for systems thinking across research (STAR). *Obesity Reviews*. 2023;e13624. doi:10.1111/obr.13624
- Fisman AS, Galler M, Klepp KI, et al. Weight status and mental well-being among adolescents: the mediating role of self-perceived body weight. A cross-national survey. *J Adolesc Health*. 2022;71(2):187-195. doi:10.1016/j.jadohealth.2022.02.010
- Savona N, Macauley T, Aguiar A, et al. Identifying the views of adolescents in five European countries on the drivers of obesity using group model building. *Eur J Public Health*. 2021;31(2):391-396. doi:10.1093/eurpub/ckaa251
- Hendricks G, Savona N, Aguiar A, et al. Adolescents' perspectives on the drivers of obesity using a group model building approach: a South African perspective. Published online 2022. doi:10.3390/ijerph
- Bröer C, Ayuandini S, Baillergeau E, et al. Recruiting and engaging adolescents in creating overweight and obesity prevention policies: the CO-CREATE project. *Obes Rev*. 2023;24(S1):e13546. doi:10.1111/obr.13546
- Johnston LM, Matteson CL, Finegood DT. Systems science and obesity policy: A novel framework for analyzing and rethinking population-level planning. *Am J Public Health*. 2014;104(7):1270-1278. doi:10.2105/AJPH.2014.301884
- Bröer C, Veltkamp G, Ayuandini S, et al. Negotiating policy ideas: participatory action research projects across five European countries. *Ethics Med Public Health*. 2023;28:100905. doi:10.1016/j.jemep.2023.100905
- Ulloa MA, Nesrallah S, Shafafi P, et al. Designing a youth-led Dialogue Forum tool: The CO-CREATE experience. *Obesity Reviews*. 2023;e13611. doi:10.1111/obr.13611
- Banik A, Knai C, Klepp K-I, et al. What policies are there and what policies are missing? A Photovoice study of adolescents' perspectives on obesity-prevention policies in their local environment. *Obesity Reviews*. 2023;e13617. doi:10.1111/obr.13617
- Budin-Ljøsne I, Ayuandini S, Baillergeau E, et al. Ethical considerations in engaging young people in European obesity prevention research: the CO-CREATE experience. *Obes Rev*. 2023;24(S1). doi:10.1111/obr.13518
- Malhi L, Karanfil Ö, Merth T, Acheson M, Palmer A, Finegood DT. Places to intervene to make complex food systems more healthy, green, fair, and affordable. *J Hunger Environ Nutr*. 2009;4(3-4):466-476. doi:10.1080/19320240903346448
- Meadows D. *Thinking in Systems: A Primer*. Chelsea Green Publishers; 2008.
- Nobles JD, Radley D, Mytton OT. The action scales model: a conceptual tool to identify key points for action within complex adaptive systems. *Perspect Public Health*. 2022;142(6):328-337. doi:10.1177/17579139211006747
- Glover D, Sumburg J. Youth and food systems transformation. *Front Sustain Food Syst*. 2020;4:4. doi:10.3389/fsufs.2020.00101
- Piscitelli A, Maria D'uggento A. Do young people really engage in sustainable behaviors in their lifestyles? *Soc Indic Res*. 2022;163(3):1467-1485. doi:10.1007/s11205-022-02955-0

28. Darmon N, Drewnowski A. Does social class predict diet quality? *Am J Clin Nutr*. 2008;87(5):1107-1117. doi:[10.1093/AJCN/87.5.1107](https://doi.org/10.1093/AJCN/87.5.1107)
29. Gordon-Larsen P, Nelson MC, Page P, Popkin BM. Inequality in the built environment underlies key health disparities in physical activity and obesity. *Pediatrics*. 2006;117(2):417-424. doi:[10.1542/PEDS.2005-0058](https://doi.org/10.1542/PEDS.2005-0058)
30. Adams J, Mytton O, White M, Monsivais P. Why are some population interventions for diet and obesity more equitable and effective than others? The role of individual agency. *PLoS Med*. 2016;13(4):e1001990. doi:[10.1371/JOURNAL.PMED.1001990](https://doi.org/10.1371/JOURNAL.PMED.1001990)
31. Popay J, Whitehead M, Hunter DJ. Editorial: injustice is killing people on a large scale—but what is to be done about it? *J Public Health (Bangkok)*. 2010;32(2):148-149. doi:[10.1093/pubmed/fdq029](https://doi.org/10.1093/pubmed/fdq029)
32. Lorenc T, Petticrew M, Welch V, Tugwell P. What types of interventions generate inequalities? Evidence from systematic reviews.

J Epidemiol Community Health (1978). 2013;67(2):190-193. doi:[10.1136/jech-2012-201257](https://doi.org/10.1136/jech-2012-201257)

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Conway-Moore K, Knai C, Finegood D, et al. Co-creating obesity prevention policies with youth: Policy ideas generated through the CO-CREATE project. *Obesity Reviews*. 2023;24(S2):e13623. doi:[10.1111/obr.13623](https://doi.org/10.1111/obr.13623)