

Power Prism framework for health advocacy: A case of dietary supplements for weight loss and muscle building sold to youth in Massachusetts municipalities

Kuanysh A Yergaliyev^{1,2*}, Lori Fresina³, Akerke Ayaganova⁴, S Bryn Austin^{2,5}

¹School of Medicine, Nazarbayev University, Astana, KAZAKHSTAN

²Department of Social and Behavioral Sciences, Harvard T. H. Chan School of Public Health, Harvard University, Boston, MA, USA

³Voices for Healthy Kids, American Heart Association, Washington, DC, USA

⁴Zhubanov University, Aktobe, KAZAKHSTAN

⁵Division of Adolescent and Young Adult Medicine, Boston Children's Hospital, Boston, MA, USA

*Corresponding Author: kxy059@mail.harvard.edu

Citation: Yergaliyev KA, Fresina L, Ayaganova A, Austin SB. Power Prism framework for health advocacy: A case of dietary supplements for weight loss and muscle building sold to youth in Massachusetts municipalities. *Electron J Gen Med.* 2025;22(4):em662. <https://doi.org/10.29333/ejgm/16371>

ARTICLE INFO

Received: 05 Jan. 2025

Accepted: 09 Apr. 2025

ABSTRACT

This study applied the Power Prism advocacy framework as a strategy design tool to inform an 18-month case study conducted in four Massachusetts municipalities (USA). The case study addressed the weak regulation and easy access to potentially dangerous weight-loss and muscle-building dietary supplements for youth in Massachusetts municipalities. The Power Prism advocacy framework is made up of six "power tools": research and data collection, coalition building and maintenance, fundraising and development, grassroots advocates and key contacts, media advocacy, and decision-maker advocacy. Based on the case study, a municipality-targeted advocacy strategy was developed for Harvard University's strategic training initiative for the prevention of eating disorders to support their efforts to persuade policymakers to strengthen regulation of weight-loss and muscle-building supplements sold to youth. The detailed application of the framework provides a replicable and innovative model for other public health initiatives seeking to promote policy changes at different levels of government.

Keywords: Power Prism framework, public health advocacy, dietary supplements, adolescent health, weight loss, muscle building

INTRODUCTION

The USA dietary supplement industry is a rapidly growing sector. It is anticipated that by 2031, the market value will reach \$70.8 billion [1]. In 2023, the market was valued at just under two-thirds of this amount at \$45.1 billion. Over the past two decades, there has been a significant increase in the variety of supplement products available, rising from around 4,000 in 1994 to over 94,000 in 2016 [2].

Although some dietary supplements are generally considered safe, those marketed for weight loss and muscle building often contain illegal and toxic substances like steroids, stimulants, and prescription drugs, as well as dangerously high levels of legal ingredients, such as excessive stimulants [3-6]. Consequently, these supplements can lead to severe health consequences such as testicular cancer, hepatitis, liver failure, heart attacks, strokes, and even death [7-11]. Medical professionals advise against using dietary supplements for weight loss or muscle gain [12, 13].

Even though the dangers of dietary supplements marketed for weight loss and muscle building are widely acknowledged, these products remain inadequately regulated in the USA,

making them readily available to adolescents and young adults [14-16]. As a result, weight-loss and muscle-building supplements are commonly used among adolescents and the risks associated with their use may be especially pronounced for this age group [10, 16]. Therefore, advocacy initiatives aimed at changing policies around youth access are crucial for preventing young people's use of these supplements and improving public health safeguards for this population.

Advocacy Frameworks

Advocacy frameworks are often used to guide strategy for policy change efforts; however, identifying an appropriate advocacy framework or model for public health action, specifically, can be a challenge [17, 18]. Some scholars employ Kotter's Change Management or the Plus Management framework as advocacy frameworks [19-21]. Others may develop their own advocacy strategies [22, 23].

The main difference between the aforementioned frameworks and the Power Prism is that many existing frameworks do not sufficiently address the dynamic, complex and localized nature of policy advocacy, particularly at the state and municipal levels. They often overlook the necessity of tailoring strategies to specific political landscapes and

community needs since they were developed in different contexts, such as for business settings [19, 20]. Additionally, these frameworks may not adequately emphasize the importance of power dynamics in advocacy, failing to equip advocates with the tools to identify and leverage power structures and motivate action effectively [17, 18].

Therefore, the Power Prism advocacy framework fills these gaps by offering a comprehensive, flexible approach that can be adapted to various local, state and national contexts. It combines strategic thinking with practical tools, ensuring that advocacy efforts are both systematic and responsive to changing conditions. The framework's emphasis on power analysis and the use of "power tools" provides advocates with a clear, actionable pathway to maximize opportunities to influence policy effectively.

Regulatory Landscape

Weight-loss and muscle-building dietary supplements are loosely regulated and widely available in the USA without age restrictions, making the products easily accessible to minors [14, 15]. As stipulated in the dietary supplement health and education act (DSHEA), which was passed into federal law in 1994, supplements are not required to undergo premarket screening or require proof of safety or effectiveness. This lax regulatory approach not only opens the door to potential adulteration but also to deceptive marketing practices. Manufacturers often make unverified claims about the benefits and effectiveness of their products, misleading consumers about their true potential and safety. Young people are particularly vulnerable to both the physical risks of adulterated supplements and the false promises of deceptive advertising. Scholars have found DSHEA inadequate for protecting youth or consumers of any age from adulterated and deceptive dietary supplements and have proposed policy changes to safeguard consumers [2, 14, 15]. Suggestions that have been proposed include strengthening the regulation of marketing and labeling, mandatory laboratory testing, establishing minimum purchase ages, and promoting consumer literacy.

Therefore, this paper's aim is to apply and describe the Power Prism framework as an advocacy strategy design tool to apply to the problem of weak regulation and easy access to potentially dangerous weight-loss and muscle-building supplements for youth in Massachusetts municipalities. The Power Prism has been successfully implemented in advocacy work by several grassroots organizations in Massachusetts, USA [24]. In detailing the real-world application of the Power Prism framework in scientific literature, the authors seek to introduce this framework to a broad audience of public health advocates.

MATERIALS AND METHODS

This case study covered 18 months between 29 August 2017 and 28 February 2019. The authors designed an advocacy strategy that served as a foundation to build political and public support for improved regulation on the sale of weight-loss and muscle-building dietary supplements for four Massachusetts municipalities. The advocacy strategy was guided by the Power Prism advocacy framework, which was developed by Lori Fresina and Judith Meredith in 2001 [25]. The core of the Power Prism is a step-by-step framework to

Table 1. Study sample characteristics: Distribution of 32 participants by city, professional role, and gender

Characteristics	n
Study participants, by city and professional role (n = 32)	
City 1	8
Policy professionals	3
Direct service providers	2
Young adults	3
City 2	9
Policy professionals	4
Direct service providers	4
Young adults	1
City 3	7
Policy professionals	2
Direct service providers	3
Young adults	2
City 4	8
Policy professionals	2
Direct service providers	4
Young adults	2
Participant groups, by professional role	
Policy professionals (n = 11)	
Health department	5
Public school district	5
Youth center	1
Direct service providers (n = 13)	
School nurses and other health professionals	6
Teacher	3
Sports coach	2
Athletic trainer	2
Young adults (n = 8)	
Male	4
Female	4
Gender (n = 32)	
Male	14
Female	18

recognize and act on opportunities in order to apply pressure on decision-makers to support policy changes [24].

Settings and Data Collection

This study was conducted in four municipalities within the Greater Boston Area, chosen for their proximity, excellent public transportation connectivity, diverse governance structures, and socioeconomic profiles. The selection was deliberate, designed to capture a broad spectrum of local policies, cultural contexts, and community engagement levels. This variety enriched the development of comprehensive and versatile advocacy strategy, allowing for a nuanced application of the Power Prism framework relevant to each unique setting.

The data collection combined primary and secondary methods, guided by the Power Prism framework. Thirty-two interviews were conducted with three key stakeholder groups purposively selected based on their influence, expertise, and role in shaping advocacy efforts: health policy professionals (including public officials and school district representatives), direct service providers to youth (such as school nurses, health/physical education teachers, sports coaches), and young adults aged 18 to 25 years who had used dietary supplements for weight-loss or muscle-building before age 18 years (Table 1).

Additionally, snowball sampling was utilized for broader participant engagement. Recruitment was conducted via email, flyers, and social media, targeting two to four

representatives from each stakeholder group in each municipality.

Concurrently, a systematic desktop study gathered secondary data, including legislative reviews, academic research, and media coverage to contextualize the regulatory landscape, conduct stakeholder analysis [26] and identify advocacy opportunities in each municipality based on Power Prism framework guidelines [25].

Interviews were designed around the Power Prism framework, utilizing its structured approach to advocacy covering access, availability, health consequences of dietary supplements for weight loss and muscle building, policy options, and political landscape in each of the cities. Interviews were conducted in private settings in Boston to ensure confidentiality and comfort, facilitating open and honest dialogue. Each session was audio-recorded, transcribed, and deidentified with the verbal consent of the participants, adhering to ethical standards approved by the Harvard Chan School IRB office (protocol #IRB17-1454).

Guiding Theoretical Framework and Analysis: Power Prism Advocacy Framework

The framework is a structured approach and an effective tool to design health advocacy strategies. As a first step, the framework suggests thinking about the following three key questions for advocacy campaigns: What do you want? Why do you want it? and Who has the power to give it to you? The framework also facilitates thinking about advocacy activities and events through the following “power tools” to build more power for the advocacy mission:

1. The **research and data collection** tool requires advocates to collect scientific data and all relevant information that would support policy solutions to address the problem.
2. The **coalition building and maintenance** tool suggests building a campaign coalition with a broad group of individuals and organizations that can provide support for the advocacy initiative and increase the likelihood of campaign success.
3. The **fundraising and development** tool encourages consideration of the financial resources required to run advocacy events.
4. **Grassroots advocates and key contacts** are important individuals as they happen to be constituents of elected officials or may have access to key decision-makers.
5. The **media advocacy** tool should be used to reach key decision-makers and mobilize grassroots advocates to support the proposed policy.
6. The **decision-maker advocacy** tool requires that advocates identify and work to understand the key individuals who make policy decisions and further try to influence them through traditional and non-traditional lobbying efforts.

The analysis was based on thematic analysis approach and structured to align with the advocacy tools of the Power Prism framework, thereby providing more dynamic and actionable insight into advocacy strategy. [Supplemental Materials](#) and official Power Prism website at mypowerpeople.com provide further methodological details [24, 25].

RESULTS AND DISCUSSIONS: CASE ILLUSTRATION OF POWER PRISM FRAMEWORK APPLICATION

The Power Prism advocacy framework was used to design a citywide advocacy strategy for local policy initiatives led by Harvard University-based group the strategic training initiative for the prevention of eating disorders (STRIPED) [25]. STRIPED has a long history of advocating for better regulation of these products with the goal of strengthening public health protections for youth. Although the proposed Power Prism advocacy framework is being actively used by grassroots organizations in Massachusetts, USA, it is a quite new tool within the public health advocacy field and has not been widely recognized. It has potential to support prospective policy initiatives that could be the first of their kind nationwide to promote and protect population health at the local and state levels.

Health Advocacy Strategy for Municipal Initiatives

A citywide advocacy strategy (see [Figure 1](#)) was developed guided by the Power Prism advocacy framework and informed by results from political feasibility and stakeholder analysis and the results from qualitative interviews with key stakeholders in four Massachusetts municipalities [27].

The qualitative research conducted by authors as a groundwork for this advocacy initiative has suggested that a complementary, multiple-pronged approach is required for the development of a relevant advocacy strategy at the local level in Massachusetts [27].

As an example of how to use the framework to guide planning, particularly in the context of municipal-level advocacy for stronger regulation on the sale of weight-loss and muscle-building supplements, the first step was to answer the following three key questions for advocacy campaigns:

1. What do you want?—To build political and public support for improved regulation of the sale of weight-loss and muscle-building dietary supplements at the municipal level.
2. Why do you want it?—To protect youth from dangerous weight-loss and muscle-building supplements.
3. Who has the power to give it to you?—Local policy makers (health boards—public health department or elected city officials).

Once the three key questions were answered, advocacy strategy design focused on six “power tools” to build momentum for the mission. The application of these tools to create a campaign plan for the issue of dietary supplements sold for weight loss and muscle building is provided below:

1. **Research and data collection tool.** The health risks and side effects associated with the use and abuse of over-the-counter dietary supplements by adolescents for weight control and muscle building are well-documented [3-13]. However, qualitative research conducted by authors indicates that there is insufficient relevant data at the municipal level [27]. As a result, local stakeholders rely on inconsistent local data for policy decisions. Advocates need to collect community-based information through existing surveys like the CDC’s youth risk behavior survey or a

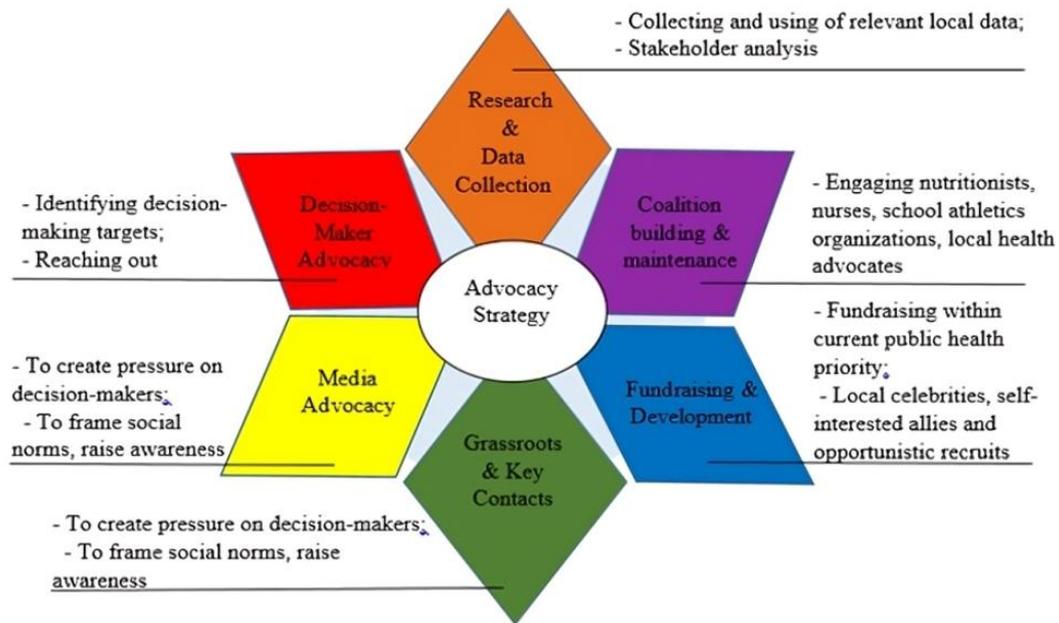


Figure 1. Power Prism framework (Source: Authors' own elaboration)

rapid community-engaged survey conducted by youth groups, which was successfully conducted in 2020 [28].

Data collection helps determine the scope of the problem, youth knowledge and attitudes, and consumer habits regarding these supplements. This approach improves communication with local decision-makers and facilitates grassroots mobilization. Key informant interviews are also crucial to understanding community knowledge about health risks, as well as campaign message appeal [29]. These methods provide context-relevant information for media engagement, grassroots support, and decision-maker engagement. Conducting feasibility studies and stakeholder analyses is essential. These analyses involve reviewing values, priorities, resources, and influence of stakeholders [26]. Focusing on individuals or organizations with interests in eating disorders, body image, and adolescent health in the public-school system is important for the advocacy strategy. Regular updates of these analyses are necessary to adapt advocacy strategies to changing political and societal landscapes.

2. **Coalition building and maintenance tools.** The Power Prism framework defines four layers of coalition members: inner circle, invested friends, self-interested allies, and opportunistic recruits. Immediate action should focus on gaining support from key allies within the advocacy community, including experts in mental health, public health, adolescent preventive medicine, health law, and policy, who are committed to preventing eating disorders. Recruiting inner circle members among health professionals, starting with nurses due to their high trustworthiness, is crucial. Potential allies in Massachusetts include the Massachusetts School Nurse Organization, the Massachusetts Association of Public Health Nurses, the National Association of Pediatric Nurse Practitioners, and physicians' organizations like the Massachusetts Medical Society and the American Academy of Pediatrics.

The study in [30] has shown that youth service providers in Massachusetts municipalities have trusted relationships with adolescents and support comprehensive initiatives aimed at safeguarding their health and enhancing their overall well-being. First parties to recruit as invested friends should include high school sports groups, health and physical education teachers' organizations, and local adolescent health prevention advocates. Health professionals' respected opinions also aid in educating community members and influencing decision-makers by identifying cases where dietary supplements caused serious health issues.

Local public health departments, while sharing a mission to improve adolescent health, have competing policy agendas and limited resources [27]. Thus, their recruitment is not a priority; instead, the framework suggests that they should be approached as decision-makers who can pass regulations. Forming alliances with groups that may have conflicting interests or benefit from the proposed regulation, such as manufacturers, retailers, and pharmacies, can neutralize opposition by finding common ground. Emphasizing the benefits of the policy initiative may turn critics into advocates.

Opportunistic recruits would include organizations with affiliations to key community decision-makers, like religious or civic groups. The tool suggests that engaging potential opposition to recruit self-interested allies and opportunistic recruits will help understand their positions and motivations, providing opportunities to find common interests and resolve issues in advance.

3. **Fundraising and development tools.** Financial resources are needed for advocacy events, starting with drafting a budget for each local campaign. Resources are required for meeting costs, collateral materials, stipends for youth data collectors, video production, and paid social media ads to spread the

message and rally support. Preparing two budget drafts - an ideal budget for fundraising and a minimal expense budget for running the campaign - is recommended.

The Massachusetts Youth Survey on weight loss and muscle building supplement use reveals that dietary supplement consumption among youth is perceived as a minor public health issue at the Massachusetts municipalities [28]. Therefore, advocates should link this issue to a current public health priority, such as healthy weight management or nutrition, to address political challenges and gain support. Identifying a high-priority issue could help secure attention, leverage fundraising mechanisms, and recruit donors. Local celebrity support, particularly from well-known Boston sports stars, could enhance fundraising efforts due to their role model status and donor connections. The tool suggests proactively collaborating with self-interested allies and opportunistic recruits, who may invest in the proposed regulation while pursuing their own causes and eventually extend the fundraising campaign.

4. **Grassroots and key contacts tool.** Engaging with local youth and parent groups that can mobilize grassroots and key contacts to amplify community voices for proposed actions and raise awareness is an important strategy. These groups have the ability to effectively bring the issue to policymakers' attention and inspire action. Given the policy's focus on children's and teens' health, mobilizing youth and parent groups is crucial, especially those experienced in policy advocacy. For instance, the 84 Movement in Boston has successfully worked on tobacco control, with a significant portion of Massachusetts high school students not smoking or vaping by 2023 [31].

Parent and youth groups, with their extensive networks, can reach key community contacts, including influential public figures. Their support can significantly increase influence on decision-makers, such as mayors who prioritize adolescent health and education. Working with parents of children with eating disorders or those using dietary supplements can make the policy initiative more compelling as well. Parent school committees and other networks are vital for mobilizing efforts to improve adolescent health and education quality. These grassroots groups are able to connect with community organizations and businesses, spread campaign information, and recruit advocates. They also have access to community leaders to provide educational materials and organize activities to influence public opinion on dietary supplements.

5. **Media advocacy tool.** An online survey among Massachusetts students suggests that media, especially social media, significantly influences and eases access to dietary supplements for minors [28]. The media advocacy tool helps advocates leverage this information, aiming to raise awareness among city residents, create pressure on local decision-makers by mobilizing youth, parents, and health advocates, and reframe social norms around supplement use among youth using social media outlets.

While the overall campaign targets are local decision-makers, the advocacy audience includes parents, health advocates, and high school-aged minors. These groups are able to create pressure on decision-makers as city residents and constituents. The media strategy includes the use of three- to five- minute videos featuring affected teenagers, parents, or athletic coaches expressing concern. Parents and health advocates should focus on protecting children and sharing stories of harm to bring emotional credibility, and health professionals can provide scientific evidence for analytical credibility. Athletic coaches can share their lack of awareness about the harm of supplements, adding insider credibility. The aim of the messages would be to educate, engage, create urgency, and recommend actions like contacting local officials.

In media messages for teenagers, the story should be told through narratives by affected young adults (victims), their parents, and peers involved in data collection. This approach would add emotional credibility and warns minors against making the same mistakes. The messages can be reused in neighboring cities. Advocacy videos can be distributed via social media, websites of coalition members, community groups. The goal is to make the videos viral, shared through private messengers and social media like Instagram, X, Facebook, and YouTube. The advocacy videos could also be part of teaching materials for awareness campaigns and lectures for decision-makers, parents, and youth.

6. **Decision-maker advocacy tool.** The initial approach for decision-making advocacy will focus on raising awareness and educating stakeholders about the health risks and preventable consequences of dietary supplements. Highlighting the detrimental impact on children and adolescents and providing examples from decision-makers own communities is imperative. Target decision-makers should include health board members and city elected officials responsible for strengthening local regulations to improve community health. Early engagement with these stakeholders would provide opportunities for education, demonstrating local support, and gauging their willingness to champion the campaign. Engagement can be done through in-person meetings, advocacy videos, op-eds, letters to editors, and articles for local newspapers and community bulletins. Prior to advocacy, there is a need for thorough research on each decision-maker's background. Identifying those particularly interested in children and youth, parents of teenage children, or junior officials looking to author relevant bills is important.

Documenting early local campaigns is essential for subsequent efforts, providing lessons and preventing the recreation of resources. Post-campaign interviews with decision-makers and stakeholders help gather feedback on what worked well and what could be improved, respecting local leaders and informing future campaigns.

As demonstrated, the Power Prism framework can be a powerful tool for planning campaigns to drive change at both organizational and state levels [25]. Each tool

within the framework is accompanied by dedicated worksheets (supplementary materials), allowing users to measure and enhance their advocacy efforts effectively. For example, the fundraising tool includes a potential donors worksheet, which helps organizations evaluate their current network of donors. Another tool to measure the effectiveness of the Coalition Building and Maintenance is the coalition mapping worksheet that can be utilized to build a successful coalition. Therefore, each tool of the Power Prism framework has specifically developed worksheets that advocacy organizations use to assess their current state and build a high-quality, strategic approach effectively.

The selection of the Power Prism framework over others, such as Kotter's Change Model, was primarily driven by the specific needs and dynamics of public health advocacy, which often requires a multifaceted approach to engage various stakeholders and navigate complex policy environments. While Kotter's model is highly effective for structured organizational change through an 8-step process [19, 32], the Power Prism provides tools specifically tailored for the complex and dynamic landscape of policy advocacy, including coalition building, media advocacy, research, grassroots mobilization, funding and direct engagement with policymakers, which are suitable for public health contexts where rapid adaptation to policy windows and direct action are required [17, 18, 21-23]. Moreover, while Kotter's model is centered on achieving an internal organizational consensus and executing change in a sequential manner, it lacks mechanisms to directly influence public opinion and policy decisions. In contrast, the Power Prism framework is equipped with tools for Media Advocacy, and Grassroots and Key Contacts advocacy, which are essential for shaping public discourse and driving policy change [17, 18, 21-23].

One vivid example of advocates effectively applying the principals of Power Prism framework is a legislative initiative in New York State, where groundbreaking legislation was introduced by Assembly member Nily Rozic and Senator Shelley Mayer during the 2022-23 legislative session and signed on October 25, 2023, by Governor Kathy Hochul [33, 34]. The Power Prism framework was instrumental in advancing this law in New York State, which is the first in the nation to prohibit the sale of weight-loss and muscle-building supplements to minors. It addresses concerns about the weak regulation of these products and their potential harmful effects on youth, including risks to physical and mental health. The law sets age verification guidelines for both in-person and online sales, emphasizing the state's commitment to protecting young consumers from potentially dangerous products. This legislative achievement showcases the effectiveness of the advocacy campaign, aligning with the strategic objectives set forth by the Power Prism framework. It highlights how structured advocacy efforts can lead to substantial policy changes, providing a robust example of the framework's impact in a real-world setting.

Limitations

This study's scope was limited to four Massachusetts municipalities, potentially limiting the generalizability of findings to other contexts. The reliance on qualitative data, while providing rich insights, may not fully represent the broader population's perspectives. Additionally, the relatively short timeframe of the study (18 months) may not capture the long-term impacts of the implemented advocacy strategy. Finally, the specific success achieved in Massachusetts may not be easily replicated in jurisdictions with differing political landscapes or community dynamics.

CONCLUSION

This advocacy strategy was developed to work toward building political and public support for the passage of local policies to regulate the sale of weight-loss and muscle-building dietary supplements to youth located in Massachusetts municipalities and facilitates the state-level advocacy initiative led by STRIPED. The advocacy strategy recommendations are guided by the Power Prism advocacy framework and qualitative research findings conducted by the authors [27]. The main strategies include collecting and using community-based and community-engaged data; building key collaborations and engaging organized youth and parent groups, and local direct service providers to youth (teachers, coaches, nurses); producing advocacy videos and utilizing novel social media tools to mobilize grassroots support and attract the attention of decision-makers; leveraging related public health priorities to run a fundraising campaign and recruiting more advocates and donors.

This case is an example that can inform the community health promotion initiatives and facilitate the design of effective city and nationwide public health advocacy endeavors to protect youth from similar health-damaging products. The Power Prism advocacy framework significantly enhances the capacity to translate research evidence into effective public health policies by systematically employing advocacy tools that ensure informed decision-making. Its structured approach includes identifying key advocacy goals and stakeholders, leveraging research to inform policy proposals, and using strategic communication to influence public and political perceptions. By facilitating the integration of scientific evidence with advocacy efforts, the Power Prism framework helps to create more effective and scientifically grounded health policies that can address public health challenges comprehensively and effectively.

Author contributions: KY & SBA: conceptualization, data collection, data curation, data analysis, investigation, methodology, writing – original draft, writing – review and editing, project administration, supervision; **LF:** methodology, validation, writing – review and editing; **AA:** validation, visualization, writing – review and editing. All authors have agreed with the results and conclusions.

Funding: This study was supported by the Jennifer Perini Fund for Eating Disorders Prevention Research; Ellen Feldberg Gordon Fund for Eating Disorders Prevention Research; and Strategic Training Initiative for the Prevention of Eating Disorders. The last author was supported by training grants T71-MC-00009 and T76-MC-00001 from the Maternal and Child Health Bureau, Health Resources and Services Administration, US Department of Health and Human Services.

Acknowledgments: The authors would like to thank Dr. Howard Koh, Dr. Emma-Louise Aveling, and Dr. Rebekka M. Lee for constructive feedback and support of the project. The authors would also like to thank the community members who participated in this study.

Ethical statement: The authors stated that the study was approved by the Office of Human Research Administration at Harvard T. H. Chan School of Public Health on 16 October 2017 with approval number IRB17-1454.

Declaration of interest: No conflict of interest is declared by the authors.

Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES

1. Statista. Total U.S. dietary supplements market size from 2016 to 2024 (in billion U.S. dollars) [Internet]. Hamburg (DE): Statista; 2024 [cited 2025 Apr 29]. Available from: <https://www.statista.com/statistics/828481/total-dietary-supplements-market-size-in-the-us/>
2. Starr R. Should states and local governments regulate dietary supplements? *Drug Test Anal.* 2016;8(5-6):402-6. <https://doi.org/10.1002/dta.1926> PMID:26594006
3. Cohen PA, Bloszies C, Yee C, Gerona R. An amphetamine isomer whose efficacy and safety in humans has never been studied, b-methyl-phenylethylamine (BMPEA), is found in multiple dietary supplements. *Drug Test Anal.* 2016;8(3-4):328-33. <https://doi.org/10.1002/dta.1793> PMID:25847603
4. Grundlingh J, Dargan PI, El-Zanfaly M, Wood DM. 2,4-dinitrophenol (DNP): A weight loss agent with significant acute toxicity and risk of death. *J Adolesc Health.* 2011; 47(4):305-9. <https://doi.org/10.1007/s13181-011-0162-6> PMID:21739343 PMID:PMC3550200
5. Cohen PA, Travis JC, Keizers PH. Four experimental stimulants found in sports and weight loss supplements: 2-amino-6-methylheptane (octo-drine), 1,4-dimethylamylamine (1,4-B), 1,3-dimethylamylamine (1,3-DMAA), and 1,3-dimethylbutylamine (1,3-DMBA). *Clin Toxicol (Phila).* 2018;56(6):421-6. <https://doi.org/10.1080/15563650.2017.1398328> PMID:29115866
6. Tucker J, Fischer T, Upjohn L. Unapproved pharmaceutical ingredients included in dietary supplements associated with US food and drug administration warnings. *JAMA Netw Open.* 2018;1(6):e183337. <https://doi.org/10.1001/jamanetworkopen.2018.3337> PMID:30646238 PMID:PMC6324457
7. Yen M, Ewald MB. Toxicity of weight loss agents. *J Med Toxicol.* 2012;8(2):145-52. <https://doi.org/10.1007/s13181-012-0213-7> PMID:22351299 PMID:PMC3550246
8. Li N, Hauser R, Holford T, et al. Muscle-building supplement use and increased risk of testicular germ cell cancer in men from Connecticut and Massachusetts. *Br J Cancer.* 2015;112(7):1247-50. <https://doi.org/10.1038/bjc.2015.26> PMID:25826226 PMID:PMC4385953
9. Centers for Disease Control and Prevention. Notes from the Field: Acute Hepatitis and Liver Failure Following the Use of a Dietary Supplement Intended for Weight Loss or Muscle Building — May–October 2013 [Internet]. Atlanta (GA): CDC; 2013 Oct 11 [cited 2025 Apr 29]. Available from: <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6240a1.htm>
10. Avelar-Escobar G, Mendez-Navarro J, Ortiz-Olvera NX, et al. Hepatotoxicity associated with dietary energy supplements: Use and abuse by young athletes. *Ann Hepatol.* 2012;11(4):564-9. [https://doi.org/10.1016/S1665-2681\(19\)31474-7](https://doi.org/10.1016/S1665-2681(19)31474-7) PMID:22700641
11. Fong TL, Klontz KC, Canas-Coto A, et al. Hepatotoxicity due to Hydroxycut: A case series. *Am J Gastroenterol.* 2010;105(7):1561-6. <https://doi.org/10.1038/ajg.2010.5> PMID:20104221 PMID:PMC3825455
12. Golden NH, Schneider M, Wood C. Preventing obesity and eating disorders in adolescents. *Pediatrics.* 2016;138(3):e20161649. <https://doi.org/10.1542/peds.2016-1649>
13. LaBotz M, Griesemer BA. Use of performance-enhancing substances. *Pediatrics.* 2016;138(1):e20161300. <https://doi.org/10.1542/peds.2016-1300> PMID:27354458
14. Pomeranz JL, Barbosa G, Killian C, Austin SB. The dangerous mix of adolescents and dietary supplements for weight loss and muscle building: Legal strategies for state action. *J Public Health Manag Pract.* 2015;21(5):496-503. <https://doi.org/10.1097/PHH.000000000000142> PMID:25248073
15. Pomeranz JL, Taylor LM, Austin SB. Over-the-counter and out-of-control: Legal strategies to protect youths from abusing products for weight control. *Am J Public Health.* 2013;103(2):220-5. <https://doi.org/10.2105/AJPH.2012.300962> PMID:23237149 PMID:PMC3558759
16. Alves C, Lima RV. Dietary supplement use by adolescents. *J Pediatr (Rio J).* 2009;85(4):287-94. <https://doi.org/10.1590/S0021-75572009000400004> PMID:19585056
17. Earnest M, Wong SL, Federico S, Cervantes L. A model of advocacy to inform action. *J Gen Intern Med.* 2023; 38(1):208-12. <https://doi.org/10.1007/s11606-022-07866-x> PMID:36323827 PMID:PMC9629756
18. de Oliveira Farias O, Fontenele MGM, Lima FET, Galvão MTG, da Silva VM, de Oliveira Lopes MV. Analysis of the health advocacy concept from the perspective of the evolutionary method. *Rev Esc Enferm USP.* 2023;57:e20230170. <https://doi.org/10.1590/1980-220x-reeusp-2023-0170en> PMID:37882698 PMID:PMC10601892
19. David JL, Thomas SL, Randle M, Daube M. A public health advocacy approach for preventing and reducing gambling-related harm. *Aust N Z J Public Health.* 2020;44(1):61-6. <https://doi.org/10.1111/1753-6405.12949> PMID:31777133
20. Rosewarne E, Moore M, Chislett W, et al. An evaluation of the Victorian salt reduction partnership's advocacy strategy for policy change. *Health Res Policy Syst.* 2021;19(1):100. <https://doi.org/10.1186/s12961-021-00759-1> PMID:34266477 PMID:PMC8281636
21. Dobson S, Voyer S, Regehr G. Perspective: Agency and activism: Rethinking health advocacy in the medical profession. *Acad Med.* 2012;87(9):1161-4. <https://doi.org/10.1097/ACM.0b013e3182621c25> PMID:22836842
22. Carlisle S. Health promotion, advocacy, and health inequalities: A conceptual framework. *Health Promot Int.* 2000;15(4):369-76. <https://doi.org/10.1093/heapro/15.4.369>
23. Cullerton K, Donnet T, Lee A, Gallegos D. Effective advocacy strategies for influencing government nutrition policy: A conceptual model. *Int J Behav Nutr Phys Act.* 2018;15(1):83. <https://doi.org/10.1186/s12966-018-0716-y> PMID:30170610 PMID:PMC6119246
24. My Power People LLC. About Power Prism [Internet]. Needham Heights (MA): My Power People LLC; [cited 2025 Apr 29]. Available from: <https://mypowerpeople.com/about-power-prism>

25. Harvard T.H. Chan School of Public Health. The Power Prism® Advocacy Framework [Internet]. Boston (MA): Harvard T.H. Chan School of Public Health; [cited 2025 Apr 29]. Available from: <https://hsph.harvard.edu/research/eating-disorders-striped/striped-advocacy-playbook/power-prism-advocacy-framework/>
26. Reich MR. The politics of reforming health policies. *Promot Educ.* 2002;9(4):138-42. <https://doi.org/10.1177/175797590200900401> PMID:12731117
27. Yergaliyev KA, Aveling E-L, Lee RM, Austin SB. Lessons for local policy initiatives to address dietary supplement use among adolescents: A qualitative study of stakeholders' perceptions. *J Adolesc Health.* 2020;67(4):550-6. <https://doi.org/10.1016/j.jadohealth.2020.03.026> PMID:32387096
28. Harvard T.H. Chan School of Public Health. Survey Results [Internet]. Boston (MA): Harvard T.H. Chan School of Public Health; 2024 Nov [cited 2025 Apr 29]. Available from: <https://hsph.harvard.edu/wp-content/uploads/2024/11/Survey-Results.pdf>
29. Pahwa M, Cavanagh A, Vanstone M. Key informants in applied qualitative health research. *Qual Health Res.* 2023;33(14):1251-61. <https://doi.org/10.1177/10497323231198796> PMID:37902082 PMCID:PMC10666509
30. Rossetti J, Berkowitz S, Maher A. Somerville, Massachusetts: A city's comprehensive approach to youth development. *Nat Civ Rev.* 2016;105(1):3-11. <https://doi.org/10.1002/ncr.21262>
31. The 84 Movement. About The 84 Movement [Internet]. Boston (MA): The 84 Movement; [cited 2025 Apr 29]. Available from: <https://www.the84.org/about>
32. Kotter JP. *Leading change.* Boston (MA): Harvard Business School Press; 1996.
33. Harvard T.H. Chan School of Public Health. New York bans sales of diet, muscle building supplements to minors [Internet]. Boston (MA): Harvard T.H. Chan School of Public Health; 2023 Oct 27 [cited 2025 Apr 29]. Available from: <https://hsph.harvard.edu/news/new-york-diet-supplements-ban/>
34. New York State Senate. Mayer, Rozic Bill to Limit Sale of Diet Pills and Weight Loss Supplements to Minors Takes Effect Today [Internet]. Albany (NY): New York State Senate; 2024 Apr 22 [cited 2025 Apr 29]. Available from: <https://myemail-api.constantcontact.com/---For-Immediate-Release---Mayer--Rozic-Bill-to-Limit-Sale-of-Diet-Pills-and-Weight-Loss-Supplements-to-Minors-Takes-Effect-Tod.html?soid=1108502293541&aid=VSmu3ZgKArI>