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Article

Assessing the Impact of SNAP-Ed: A Comprehensive Evaluation Framework for Healthy Living Promotion in the United States

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Abstract: The Supplemental Nutrition Assistance Program Education (SNAP-Ed) plays a crucial role in promoting healthy food choices and physically active lifestyles among low-income populations. This article proposes a comprehensive evaluation framework for SNAP-Ed initiatives to assess the program's reach, implementation, outcomes, and cost-effectiveness. The framework incorporates key components such as needs assessment, process evaluation, outcome evaluation, and economic evaluation. By integrating various data sources and methods, the proposed framework enables a holistic understanding of the program's strengths, challenges, and opportunities for improvement. It emphasizes the importance of rigorous evaluation methods to measure the impact of SNAP-Ed interventions on nutrition knowledge, attitudes, behaviors, and overall health outcomes. The framework aims to provide a structured approach for SNAP-Ed Implementing Agencies to demonstrate the program's effectiveness and guide decision-making for continuous improvement.

Keywords: SNAP-Ed; evaluation framework; nutrition education; outcome assessment; program improvement

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1. Introduction

Food security is an essential condition in defining the health of a population and the prosperity of a country (George, 2009; Lor & George, 2014; Singhania et al., 2022). In this regard, the Supplemental Nutrition Assistance Program Education (SNAP-Ed) is an important milestone in the United States. It is also an essential component of the broader Supplemental Nutrition Assistance Program (SNAP) in the United States, which was meant to ensure healthy eating and living for everyone. SNAP-Ed aims to provide nutrition education to individuals and families eligible for SNAP benefits, assisting them in making healthier food choices within a limited budget and promoting physically active lifestyles in alignment with the Dietary Guidelines for Americans (Burke et al., 2022). Research has shown that SNAP-Ed interventions have led to positive outcomes such as increased fruit and vegetable consumption, improved food security, better dietary outcomes, and enhanced nutrition-related behaviors among low-income populations (Young et al., 2013; Rivera et al., 2016; Caldwell et al., 2021; Ryan-Ibarra et al., 2020).

SNAP-Ed is implemented through various channels, including schools, farmers markets, and community organizations, with the objective of reaching SNAP-eligible households and participants (Wall et al., 2011; Scherr et al., 2021). The program underscores the significance of education in advocating for healthier food choices, efficient food resource management, and overall dietary enhancement (Adedokun et al., 2020). By offering nutrition and physical activity education, SNAP-Ed aims to empower individuals to make well-informed decisions regarding their food purchases and consumption habits (Scherr et al., 2021).

Studies have indicated that SNAP-Ed interventions can result in notable enhancements in food security, particularly among households with children (Rivera et al., 2016; Eicher-Miller et al., 2020). Furthermore, SNAP-Ed programs have been associated with improved cardiovascular fitness in school-aged children, highlighting the positive influence of nutrition education on physical health outcomes (Thompson et al., 2020). Despite the advantages of SNAP-Ed, challenges persist in delivering direct nutrition education programs, especially in rural areas where obstacles like limited transportation and food supply can impede implementation (Haynes-Maslow et al., 2019). It is important to develop strategies to overcome these barriers to ensure the effective dissemination of nutrition education to all eligible individuals and families (Haynes-Maslow et al., 2019).

2. The SNAP-Ed Program: History and Prospects

The SNAP-Ed program has a history dating back to the 1960s when the Food Stamp Program, now known as SNAP, was first introduced. Pilot nutrition education initiatives were launched in the late 1970s and early 1980s, leading to the formal establishment of SNAP-Ed in 1992 under the Food and Nutrition Service (FNS) of the United States Department of Agriculture (USDA) (Calancie et al., 2015). Initially focused on providing nutrition education, SNAP-Ed has expanded to include obesity prevention and the promotion of physical activity, aligning with public health goals to combat chronic diseases like obesity (Buscemi et al., 2019). The Healthy, Hunger-Free Kids Act of 2010 played a crucial role in reauthorizing SNAP-Ed and providing additional funding to support its efforts in fostering healthy eating habits and active lifestyles among low-income populations (Linder, 1999).

SNAP-Ed has emphasized evidence-based approaches to ensure the effectiveness of its interventions, aligning its programming with best practices in nutrition education and behavior change (Grimsey & Lewis, 2007). The program has also broadened its reach through public-private partnerships and collaborations with various stakeholders, including community organizations and healthcare providers, to enhance the impact of its initiatives (Kraak et al., 2011). Today, SNAP-Ed operates nationwide, offering nutrition education and obesity prevention services through various channels such as classroom-based programs, community events, social marketing campaigns, and policy, systems, and environmental change initiatives (Burke et al., 2019). By utilizing these multifaceted strategies and partnerships, SNAP-Ed continues to play a vital role in promoting healthy behaviors and reducing the risk of chronic diseases among low-income individuals and families across the United States.

The SNAP-Ed program faces several challenges and opportunities that will shape its future. One significant challenge is the difficulty in data collection due to the program's tailored interventions at the community level, making it challenging to gather uniform data for national effectiveness assessment (Lohse & Wamboldt, 2013). Also, the broad focus of recent programs, targeting various levels of influence within communities, lacks sufficient peer-reviewed studies evaluating their impact (Scherr et al., 2021).

To address these challenges, the USDA's Food and Nutrition Service launched the National Program Evaluation and Reporting System (N-PEARS) to enhance data collection and evaluation (Lohse & Wamboldt, 2013). Moreover, the SNAP-Ed Behavior Outcome Measurement Toolkit was introduced to support individuals in making healthy choices, aligning with the SNAP-Ed Evaluation Framework (Sadeghzadeh et al., 2022). The FY 2024 SNAP-Ed Plan Guidance provides states with policy direction for operating the SNAP Nutrition Education and Obesity Prevention Grant Program (Sanjeevi, 2024).

These initiatives offer prospects for the SNAP-Ed program by improving data collection, enhancing intervention effectiveness, and providing policy guidance. The future of SNAP-Ed will be influenced by these efforts, ensuring that the program effectively meets the needs of SNAP-eligible individuals. Continuous monitoring and evaluation will be crucial to adapting strategies and ensuring positive outcomes for the program's participants.

3. Objectives of the Study

(1) To highlight the value of a robust evaluation framework for assessing the reach, implementation, outcomes, and cost-effectiveness of SNAP-Ed initiatives.

(2) To provide a structured approach to measure the impact of the program and guide decision-making for State agencies and Implementation partners.

(3) To address the challenges in implementing a comprehensive evaluation framework, including resource requirements and scalability issues.

To ensure the successful implementation of the SNAP-Ed nutritional education program, a robust evaluation framework is essential (Rivera et al., 2016). Effective program evaluation plays a critical role in assessing the reach, implementation, outcomes, and cost-effectiveness of SNAP-Ed initiatives (Bleich et al., 2020). A comprehensive evaluation framework provides a structured approach to measure the impact of the program and guide decision-making for State agencies and Implementation partners (Kaiser et al., 2015). However, challenges exist in implementing such a comprehensive evaluation framework, including resource requirements and scalability issues (Sanjeevi, 2024). Typical frameworks' focus on short-term outcomes may limit its ability to capture the long-term impact of SNAP-Ed interventions on participants' health and well-being (Haynes-Maslow et al., 2018). Addressing these concerns is crucial to enhance the robustness and effectiveness of the evaluation process and ensure that SNAP-Ed initiatives are evaluated comprehensively and accurately (Leung & Wolfson, 2019).

The proposed evaluation framework emphasizes the importance of rigorous evaluation methods to assess the effectiveness of SNAP-Ed interventions (Young et al., 2013). By incorporating key evaluation components such as needs assessment, process evaluation, outcome evaluation, and

economic evaluation, the framework aims to provide a comprehensive understanding of the program's impact (Thompson et al., 2020). This structured approach enables SNAP-Ed Implementing Agencies to measure key outcomes and demonstrate the program's reach and effectiveness at various levels (Sadeghzadeh et al., 2022). By integrating various data sources and methods, the proposed framework enables a holistic understanding of the program's strengths, challenges, and opportunities for improvement. It incorporates a needs assessment, program design and implementation, process evaluation, outcome evaluation, economic evaluation, and a continuous improvement cycle. This approach ensures that the SNAP-Ed program is tailored to the specific needs of the target population and delivers measurable positive impacts on nutrition knowledge, attitudes, behaviors, and overall health outcomes.

4. Towards a Comprehensive SNAP-Ed Program Evaluation Framework

The evaluation component gets activated during the later stages of the SNAP-Ed project plan. However, it is critically important for the evaluation framework to be ready during the project planning itself and definitely before the project implementation begins.

The following are the key components that we propose to include in our evaluation framework.

4.1. Needs Assessment

Conduct the survey to gather information on dietary habits, nutrition knowledge, barriers, and preferences of the target population.

Analyze existing data sources (e.g., state health statistics, food insecurity rates) to identify high-need areas or populations.

Conduct focus groups or interviews with stakeholders (community leaders, healthcare providers, educators) to understand local contexts and challenges.

4.2. Program Design and Implementation

Develop program goals, objectives, and measurable outcomes based on the needs assessment findings.

Design educational curricula, materials, and delivery methods tailored to the target audience's preferences and needs.

Train educators and facilitators to ensure consistent and effective program delivery.

Document program implementation processes, including reach, dosage, and fidelity measures.

4.3. Process Evaluation

Conduct observations of educational sessions to assess delivery quality, participant engagement, and fidelity to the curriculum.

Administer participant satisfaction surveys to gather feedback on the program's relevance, clarity, and applicability.

Track participation rates, attendance, and completion rates to evaluate program reach and retention.

4.4. Outcome Evaluation

Develop pre- and post-program assessments to measure changes in participants' knowledge, attitudes, skills, and behaviors related to nutrition and healthy eating.

Conduct follow-up surveys or interviews to assess long-term impacts on dietary habits, food resource management, and overall well-being.

Analyze changes in relevant health indicators (e.g., obesity rates, food insecurity) at the community or state level, if feasible.

4.5. Economic Evaluation

Collect data on program costs, including personnel, materials, facilities, and administrative expenses.

Estimate the potential cost savings or economic benefits associated with improved health outcomes and reduced healthcare costs.

Conduct cost-effectiveness or cost-benefit analyses to evaluate the program's return on investment.

4.6. Reporting and Continuous Improvement

Compile evaluation findings and present them in a clear and accessible format (e.g., annual reports, dashboards, presentations).

Share evaluation results with stakeholders, including funders, policymakers, and the community.

Use evaluation data to identify areas for program improvement, modify curricula or delivery methods, and inform future program planning and budgeting.

5. The Evaluation Workflow

The flowchart presents the proposed SNAP-Ed evaluation framework as a sequential process, guiding the program's evaluation from start to finish. It begins with a needs assessment, which informs the program design and planning phase. Once the program is designed, it enters the implementation stage, followed by a process evaluation to assess the quality and fidelity of the implementation. The next step is an outcome evaluation, measuring changes in participants' knowledge, behaviors, and health indicators. An economic evaluation is then conducted to analyze the program's costs and potential cost savings or benefits. Finally, the evaluation findings are reported, and a continuous improvement cycle is initiated, allowing for adjustments and refinements to the program based on the evaluation results.

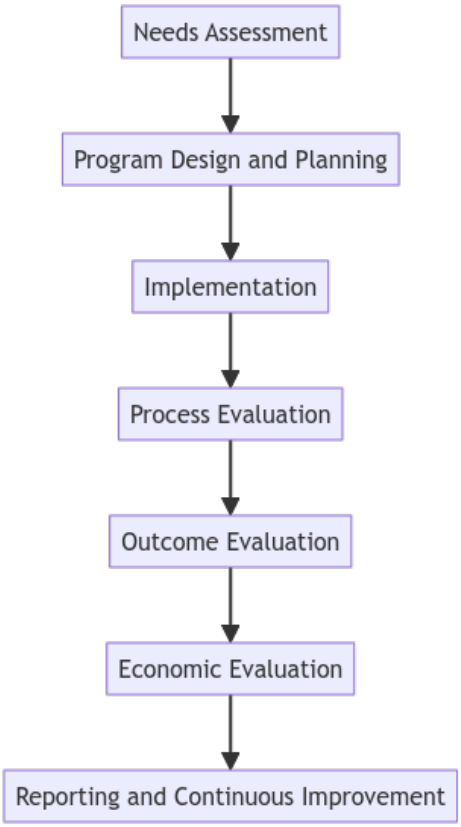

Figure 1. Evaluation Framework: A Flowchart.

The flowchart provides a clear, step-by-step representation of the evaluation process, ensuring a comprehensive and systematic approach to assessing the SNAP-Ed program's effectiveness.

6. Depicting the Evaluation Framework as A Logic Model

The logic model diagram is an attempt to provide a visual representation of the SNAP-Ed evaluation framework, illustrating the logical relationships between the program's inputs, activities, outputs, and intended impacts. It begins with the necessary inputs, such as funding, personnel, partners, and existing data sources. These inputs fuel the activities, which include conducting a needs assessment through surveys, data analysis, and focus groups, as well as designing the program's curricula, materials, and training. The outputs encompass the delivery of educational sessions and the observed changes in participants' knowledge, attitudes, skills, behaviors, and health outcomes. The logic model culminates in the desired long-term impacts, including improved nutrition and healthy eating, reduced nutrition-related health issues, and potential cost savings in healthcare.

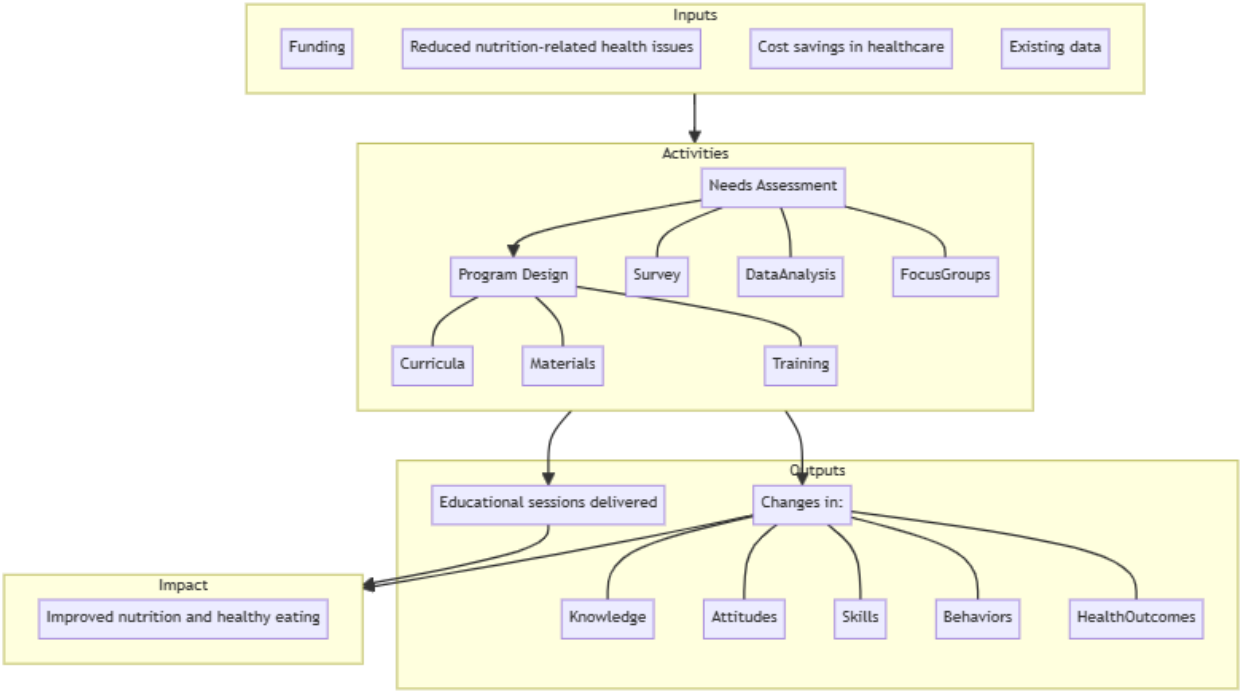

Figure 2. The evaluation framework as a logic diagram.

The logic model diagram (Figure 2) complements the evaluation framework flowchart (Figure 1) by providing a visual representation of the SNAP-Ed program's theory of change and the logical relationships between its inputs, activities, outputs, and intended impacts. While the flowchart in Figure 1 focuses on the sequential steps and processes involved in the evaluation, the logic model in Figure 2 emphasizes the causal links and assumptions that connect the program's inputs to its intended outcomes. The logic model begins with the necessary inputs, such as funding, personnel, partners, and existing data sources. These inputs fuel the activities, which include conducting a needs assessment through surveys, data analysis, and focus groups, as well as designing the program's curricula, materials, and training. The outputs encompass the delivery of educational sessions and the observed changes in participants' knowledge, attitudes, skills, behaviors, and health outcomes. The logic model culminates in the desired long-term impacts, including improved nutrition and healthy eating, reduced nutrition-related health issues, and potential cost savings in healthcare. By presenting the evaluation framework through these two complementary lenses, the manuscript offers a completer and more coherent picture of the proposed approach, addressing both the "how" (the evaluation process) and the "why" (the logic and theory behind the program and its evaluation).

7. Discussion

Ensuring that individuals have consistent access to adequate and nutritious food is one of the fundamental expectations from developed societies (Kreider et al., 2012; Mabli & Ohls, 2015). Food security sustains communities and societies and is an integral element of collective wellbeing, particularly in rural areas (Okech et al., 2012; Ratcliffe et al., 2008). As we have mentioned earlier in the paper, the SNAP federal food assistance program plays a pivotal role in alleviating food-related hardships. SNAP participation is associated with an increase in household food security, thereby improving the health and well-being of families. Despite the positive impact of SNAP on food security, there have been challenges in assessing its effectiveness, particularly in promoting food security and addressing health issues. Proper measurement of food security is crucial for targeting food aid, monitoring global food systems, evaluating nutrition programs, and informing policy decisions (Jones et al., 2013).

SNAP-Ed has been highlighted as a successful intervention in enhancing food security among households with children (Rivera et al., 2016). SNAP-Ed's efficacy in improving food security has been observed across urban and rural settings, emphasizing its role in enhancing food security regardless of environmental factors. SNAP-Ed improves food security independently of food assistance and program characteristics, underscoring its importance in promoting food security (Eicher-Miller et al., 2020). SNAP also contributes to enhancing the food security of recipients, emphasizing the program's role in ensuring consistent access to adequate food (Nord, 2012). However, short-

term participation in SNAP has shown few changes in food security and dietary intake among low-income individuals, highlighting the need for continuous support and education programs like SNAP-Ed (Leung et al., 2014).

As mentioned elsewhere in this paper, there have been concerns and criticisms about the currently employed evaluation approaches and frameworks. One key concern is the need for consistency in measurement tools and outcomes across evaluations. Studies evaluating the effectiveness of SNAP-Ed interventions have been characterized by inconsistency in measurement tools and outcomes, which can hinder the ability to compare results and draw meaningful conclusions (Rivera et al., 2019). Another criticism relates to the potential limitations of the framework in capturing the full spectrum of program outcomes. The framework primarily focuses on key SNAP-Ed outcomes, but there may be other important metrics or unintended consequences of the program that are not adequately captured or evaluated (Sadeghzadeh et al., 2022). Likewise, the reliance on self-reported data in evaluations poses a risk of response biases, which can impact the validity and reliability of the findings (Hofer et al., 2021). It is essential to consider the potential for bias when interpreting evaluation results and to explore alternative data collection methods to enhance the robustness of the evaluation process.

The available frameworks face challenges in terms of resource requirements and scalability, too. Implementing a comprehensive evaluation framework like SNAP-Ed across different regions and populations may demand significant resources, expertise, and funding, which could limit its widespread adoption and effectiveness (Haynes-Maslow et al., 2019). Moreover, the framework's emphasis on short-term outcomes, such as changes in knowledge and behaviors, may not fully capture the long-term impact of SNAP-Ed interventions on participants' health and well-being. Evaluating long-term health outcomes and sustainability beyond the duration of the program is crucial for understanding the lasting effects of SNAP-Ed initiatives (Caldwell et al., 2021).

In the light of the above, the evaluation framework presented in this paper offers a comprehensive and multi-dimensional approach to assessing the effectiveness and impact of the SNAP-Ed nutritional education program. By incorporating various data sources and evaluation methods, this framework addresses the diverse aspects of program implementation, outcomes, and cost-effectiveness, providing a holistic understanding of the program's strengths and areas for improvement. A key strength of our proposed framework is its emphasis on a thorough needs assessment, which lays the foundation for designing and tailoring the program to the specific needs and preferences of the target population.

The inclusion of the survey instrument, complemented by data analysis and focus groups, ensures that the program is relevant, culturally appropriate, and addresses the real-world challenges and barriers faced by participants. This comprehensive need assessment aligns with the recommendation of the U.S. Department of Agriculture's SNAP-Ed Guidance, which emphasizes the importance of understanding the unique circumstances and contexts of the communities served. The proposed framework also recognizes the importance of process evaluation, which is often overlooked in program evaluations. By conducting observations, participant satisfaction surveys, and tracking implementation metrics, this framework enables the identification of potential issues or deviations from the intended program delivery. This information can be used to make real-time adjustments and ensure fidelity to the program's design, ultimately improving the quality and effectiveness of the educational interventions.

The outcome evaluation component, which measures changes in knowledge, attitudes, skills, behaviors, and health outcomes, provides valuable data to demonstrate the program's impact and justify continued funding and support. The proposed use of pre- and post-program assessments, as well as follow-up surveys or interviews, allows for the evaluation of both short-term and long-term effects, providing a comprehensive understanding of the program's impact on participants' lives. The economic evaluation component of the framework addresses a critical aspect of program sustainability and resource allocation. By estimating the potential cost savings and economic benefits associated with improved health outcomes, this evaluation can inform policymakers and funders about the program's return on investment and its broader societal impacts. This information can be instrumental in securing continued funding and support for the SNAP-Ed program. The emphasis on reporting and continuous improvement ensures that the evaluation findings are effectively communicated to stakeholders and used to inform program refinements and future planning. This iterative process fosters a culture of data-driven decision-making and ongoing program optimization, ensuring that the SNAP-Ed program remains responsive to evolving needs and maximizes its impact on the communities it serves.

While the proposed evaluation framework is reasonably comprehensive, we must acknowledge potential limitations and challenges. Implementing such a multi-faceted evaluation may require significant resources, including personnel, expertise, and funding. In addition, the collection of long-term outcome data and community-level health indicators may be challenging due to factors such as participant attrition, data availability, and the influence of external variables.

However, these challenges can be mitigated through careful planning, resource allocation, and the use of appropriate statistical methods and data analysis techniques.

8. Conclusion

The SNAP-Ed program serves as a pivotal instrument in fostering healthier dietary choices and active lifestyles among economically disadvantaged groups. The comprehensive evaluation framework proposed in this paper offers a robust tool for assessing the program's reach, implementation, outcomes, and cost-effectiveness. By amalgamating various data sources and methodologies, this framework provides a holistic view of the program's strengths and areas for enhancement. It underscores the necessity of stringent evaluation techniques to quantify the impact of SNAP-Ed interventions on nutrition knowledge, attitudes, behaviors, and overall health outcomes.

Our SNAP-Ed evaluation framework offers a robust and systematic approach to assessing the program's effectiveness and impact. By combining a variety of evaluation methods, including surveys, focus groups, process monitoring, outcome assessments, and cost-benefit analyses, this framework provides a comprehensive understanding of the program's successes, challenges, and areas for improvement. The data gathered through this evaluation process will not only demonstrate the program's impact and justify funding requests but also inform continuous program refinement and optimization. The evaluation framework ensures that the SNAP-Ed nutritional education program remains responsive to the evolving needs of the community, maximizes its reach and effectiveness, and contributes to lasting positive changes in nutrition and health outcomes for its participants. The framework is designed to equip SNAP-Ed Implementing Agencies with a structured approach to validate the program's efficacy and inform decisions for ongoing refinement.

This research underscores the potential of such a comprehensive evaluation framework in enhancing the effectiveness of SNAP-Ed and similar initiatives, ultimately contributing to improved health outcomes among low-income populations. Future research should focus on applying this framework in diverse settings and exploring its adaptability to other public health programs.

Limitations and Potential Research Directions

The proposed SNAP-Ed evaluation framework has several limitations. First, implementing a comprehensive evaluation requires significant resources, which may limit its widespread adoption and scalability. Second, collecting long-term outcome data and isolating the program's impact from confounding factors can be challenging. Third, reliance on self-reported data may introduce response biases, affecting the validity and reliability of findings. Fourth, the framework may not fully capture all relevant metrics or unintended consequences of the program. Lastly, the framework's effectiveness may vary across different contexts and populations, requiring adaptations to ensure cultural appropriateness and feasibility. Despite these limitations, the proposed framework offers a valuable starting point for assessing SNAP-Ed's impact. Future research should focus on refining the framework, addressing resource constraints, and testing its applicability in diverse settings. Collaborative efforts among stakeholders can help enhance the framework's robustness and practicality.

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References

Adedokun, O. A., Plonski, P., & Aull, M. (2020). Food resource management mediates the relationship between participation in a SNAP-Ed nutrition education program and diet quality. *Journal of Nutrition Education and Behavior, 53*(5), 40–409. https://doi.org/10.1016/j.jneb.2020.09.013

Bleich, S. N., Moran, A. J., Vercammen, K. A., Frelier, J. M., Dunn, C. G., Zhong, A., & Fleischhacker, S. E. (2020). Strengthening the public health impacts of the supplemental nutrition assistance program through policy. *Annual Review of Public Health*, *41*, 453–480. https://doi.org/10.1146/annurev-publhealth-040119-094143

Burke, M., Gleason, S., Singh, A., & Wilkin, M. K. (2019). Use of policy, systems, and environmental change strategies within Supplemental Nutrition Assistance Program-Education (SNAP-Ed), 2014–2016 (p04–160–19). *Community and Public Health Nutrition*, *3* (Supplement 1). https://doi.org/10.1093/cdn/nzz051.p04-160-19

Burke, M. P., Gleason, S., Singh, A., & Wilkin, M. K. (2022). Policy, systems, and environmental change strategies in the Supplemental Nutrition Assistance Program-Education (SNAP-Ed). *Journal of Nutrition Education and Behavior*, *54*(4), 320–326. https://doi.org/10.1016/j.jneb.2021.09.008

Buscemi, J., Odoms-Young, A., Stolley, M. R., Schiffer, L., Blumstein, L., Clark, M. H., Berbaum, M. L., McCaffrey, J., Braunscheweig, C., & Fitzgibbon, M. L. (2019). Comparative effectiveness trial of an obesity prevention intervention in EFNEP and SNAP-Ed: Primary outcomes. *Nutrients*, *11*(5), 1012. https://doi.org/10.3390/nu11051012

Calancie, L., Leeman, J., Jilcott Pitts, S. B., Khan, L. K., Fleischhacker, S., Evenson, K. R., Schreiner, M., Byker, C., Owens, C., McGuirt, J., Barnidge, E., Dean, W., Johnson, D., Kolodinsky, J., Piltch, E., Pinard, C., Quinn, E., Whetstone, L., & Ammerman, A. (2015). Nutrition-related policy and environmental strategies to prevent obesity in rural communities: A systematic review of the literature, 2002–2013. *Preventing Chronic Disease*, *12*, 140540. https://doi.org/10.5888/pcd12.140540

Caldwell, J., Kuo, T., Shah-Patel, D., & Cohen, D. A. (2021). Health behavior changes among adults in the supplemental nutrition assistance program education, Los Angeles County, California. *Preventing Chronic Disease*, *18*, 210221. https://doi.org/10.5888/pcd18.210221

Eicher-Miller, H. A., Rivera, R. L., Sun, H., Zhang, Y., Maulding, M. K., & Abbott, A. R. (2020). Supplemental Nutrition Assistance Program-Education improves food security independent of food assistance and program characteristics. *Nutrients, 12*(9), 2636. https://doi.org/10.3390/nu12092636

George, B. (2009). The global food crisis: A fresh call for sustainable agriculture. *Economic Annals-XXI, 101*(3–4), 27–29. https://ea21journal.world/index.php/ea-v101-11/

Grimsey, D., & Lewis, M. (2007). *Public private partnerships: The worldwide revolution in infrastructure provision and project finance*. Edward Elgar Publishing.

Haynes-Maslow, L., Osborne, I., & Pitts, S. J. (2018). Best practices and innovative solutions to overcome barriers to delivering policy, systems and environmental changes in rural communities. *Nutrients*, *10*(8). https://doi.org/10.3390/nu10081012

Haynes-Maslow, L., Osborne, I., & Pitts, S. J. (2019). Examining barriers and facilitators to delivering SNAP-Ed direct nutrition education in rural communities. *American Journal of Health Promotion, 33*(5), 736–744. https://doi.org/10.1177/0890117118821845

Hofer, R., Wilkin, M. K., Mayers, E., Wolford, B. K., Butler, B., Beavers, B., & Zubieta, A. C. (2021). Development and evaluation of a research-driven health communication campaign to increase fruit and vegetable consumption among SNAP-Eligible Ohio adults. *Social Marketing Quarterly*, *27*(4), 267–283. https://doi.org/10.1177/15245004211042413

Jones, A. D., Ngure, F. M., Pelto, G., & Young, S. L. (2013). What are we assessing when we measure food security? A compendium and review of current metrics. *Advances in Nutrition*, *4*(5), 481–505. https://doi.org/10.3945/an.113.004119

Kaiser, L., Chaidez, V., Algert, S., Horowitz, M., Martin, A., Mendoza, C., Neelon, M., & Ginsburg, D. C. (2015). Food resource management education with SNAP participation improves food security. *Journal of Nutrition Education and Behavior*, *47*(4), 374–378. https://doi.org/10.1016/j.jneb.2015.01.012

Kraak, V., Harrigan, P., Lawrence, M., Harrison, P. J., Jackson, M. A., & Swinburn, B. (2011). Balancing the benefits and risks of public-private partnerships to address the global double burden of malnutrition. *Public Health Nutrition*, *15*(3), 503–517. https://doi.org/10.1017/s1368980011002060

Kreider, B., Pepper, J. V., Gundersen, C., & Jolliffe, D. (2012). Identifying the effects of SNAP (food stamps) on child health outcomes when participation is endogenous and misreported. *Journal of the American Statistical Association, 107*(499), 958–975. https://doi.org/10.1080/01621459.2012.682828

Leung, C.W., & Wolfson, J. A. (2019). Perspectives from supplemental nutrition assistance program participants on improving snap policy. *Health Equity*, *3*(1), 81–85. https://doi.org/10.1089/heq.2018.0094

Leung, C. W., Cluggish, S., Villamor, E., Catalano, P. J., Willett, W. C., & Rimm, E. B. (2014). Few changes in food security and dietary intake from short-term participation in the supplemental nutrition assistance program among low-income Massachusetts adults. *Journal of Nutrition Education and Behavior, 46*(1), 68–74. https://doi.org/10.1016/j.jneb.2013.10.001

Linder, S. H. (1999). Coming to terms with the public-private partnership: A grammar of multiple meanings. *American Behavioral Scientist*, *43*(1), 35–51. https://doi.org/10.1177/00027649921955146

Lohse, B. & Wamboldt, P. (2013). Purposive Facebook recruitment endows cost-effective nutrition education program evaluation. *Jmir Research Protocols*, *2*(2), Article e2713. https://doi.org/10.2196/resprot.2713

Lor, P. H., & George, B. P. (2014). An appreciative inquiry into the healthcare concerns of the elder Hmong women living in Alaska, USA. *Journal of Rural and Community Development*, *9*(3), 17–29. https://journals.brandonu.ca/jrcd/article/view/812/177

Mabli, J., & Ohls, J. (2015). Supplemental Nutrition Assistance Program participation is associated with an increase in household food security in a national evaluation. *The Journal of Nutrition*, *145*(2), 344–351. https://doi.org/10.3945/jn.114.198697

Nord, M. (2012). How much does the Supplemental Nutrition Assistance Program alleviate food insecurity? Evidence from recent programme leavers. *Public Health Nutrition*, *15*(5), 811–817. https://doi.org/10.1017/S1368980011002709

Okech, R., Haghiri, M., & George, B. P. (2012). Rural tourism as a sustainable development alternative: An analysis with special reference to Luanda, Kenya. *CULTUR-Revista de Cultura e Turismo*, *6*(3), 36–54. https://periodicos.uesc.br/index.php/cultur/article/view/291/300

Ratcliffe, C., McKernan, S. M., & Finegold, K. (2008). Effects of food stamp and TANF policies on food stamp receipt. *Social Service Review*, *82*(2), 291–334. https://doi.org/10.1086/589707

Rivera, J. A., Pedraza, L. S., Aburto, T. C., Batis, C., Sánchez-Pimienta, T. G., de Cosío, T. G., Lopez-Olmedo, N., & Pedroza-Tobías, A. (2016). Overview of the dietary intakes of the Mexican population: Results from the National Health and Nutrition Survey 2012. *The Journal of Nutrition*, *146*(9), 1851S–1855S. https://doi.org/10.3945/jn.115.221275

Rivera, R. L., Maulding, M. K., & Eicher-Miller, H. A. (2019). Effect of Supplemental Nutrition Assistance Program–Education (SNAP-Ed) on food security and dietary outcomes. *Nutrition Reviews*, *77*(12), 903–921. https://doi.org/10.1093/nutrit/nuz013

Ryan-Ibarra, S., DeLisio, A., Bang, H., Adedokun, O., Bhargava, V., Franck, K., Funderburk, K., Lee, J. S., Parmer, S., & Sneed, C. (2020). The US Supplemental Nutrition Assistance Program–education improves nutrition-related behaviors. *Journal of Nutritional Science*, *9*, Article e44. https://doi.org/10.1017/jns.2020.37

Sadeghzadeh, C., Sheppard, B., de Groot, J., & De Marco, M. (2022). Evaluating the benefits of a SNAP-Ed-funded community garden intervention using ripple effect mapping. *Health Education & Behavior*, *49*(1), 141–149. https://doi.org/10.1177/10901981211058075

Sanjeevi, N., & Monsivais, P. (2024). Consumption trends and eating context of lentils and dried peas in the United States: A nationally representative study. *Nutrients*, *16*(2). https://doi.org/10.3390/nu16020277

Scherr, R. E., Jones, A. M., Colorafi, R., Klisch, S., Linnell, J. D., & Soule, K. E. (2021). Assessing the effectiveness of an extender model partnership in implementing a multicomponent, school-based nutrition intervention. *Health Promotion Practice*, *22*(6), 890–898. https://doi.org/10.1177/1524839920920305

Singhania, O., Swain, S. K., & George, B. (2022). Interdependence and complementarity between rural development and rural tourism: A bibliometric analysis. *Rural Society*, *31*(1), 15–32. https://doi.org/10.1080/10371656.2022.2062198

Thompson, H. R., Hewawitharana, S. C., Kao, J., Rider, C., Talmage, E., Gosliner, W., Whetstone, L., & Woodward-Lopez, G. (2020). SNAP-Ed physical activity interventions in low-income schools are associated with greater cardiovascular fitness among 5th and 7th grade students in California. *Preventive Medicine Reports*, *20*, 101222. https://doi.org/10.1016/j.pmedr.2020.101222

Wall, D. E., Least, C., Gromis, J., & Lohse, B. (2011). Nutrition education intervention improves vegetable-related attitude, self-efficacy, preference, and knowledge of fourth-grade students. *Journal of School Health*, *82*(1), 37–43. https://doi.org/10.1111/j.1746-1561.2011.00665.x

Young, C. R., Aquilante, J. L., Solomon, S., Colby, L., Kawinzi, M. A., Uy, N., & Mallya, G. (2013). Improving fruit and vegetable consumption among low-income customers at farmers markets: Philly food bucks, Philadelphia, Pennsylvania, 2011. *Preventing Chronic Disease*, *10*. https://doi.org/10.5888/pcd10.120356

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