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# Strategies to improve the dietary quality of Supplemental Nutrition Assistance Program (SNAP) beneficiaries: an assessment of stakeholder opinions

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## Abstract

*Objective:* To examine the opinions of stakeholders on strategies to improve dietary quality of Supplemental Nutrition Assistance Program (SNAP) participants.

*Design:* Participants answered a thirty-eight-item web-based survey assessing opinions and perceptions of SNAP and programme policy changes.

*Setting:* USA.

*Subjects:* Survey of 522 individuals with stakeholder interest in SNAP, conducted in October through December 2011.

*Results:* The top three barriers to improving dietary quality identified were: (i) unhealthy foods marketed in low-income communities; (ii) the high cost of healthy foods; and (iii) lifestyle challenges faced by low-income individuals. Many respondents (70%) also disagreed that current SNAP benefit levels were adequate to maintain a healthy diet. Stakeholders believed that vouchers, coupons or monetary incentives for purchasing healthful foods might have the greatest potential for improving the diets of SNAP participants. Many respondents (78%) agreed that sodas should not be eligible for purchases with SNAP benefits. More than half (55%) believed retailers could easily implement such restrictions. A majority of respondents (58%) agreed that stores should stock a minimum quantity of healthful foods in order to be certified as a SNAP retailer, and most respondents (83%) believed that the US Department of Agriculture should collect data on the foods purchased with SNAP benefits.

*Conclusions:* Results suggest that there is broad stakeholder support for policies that align SNAP purchase eligibility with national public health goals of reducing food insecurity, improving nutrition and preventing obesity.

**Keywords**  
Food insecurity  
SNAP  
Policies  
Diet quality

The Supplemental Nutrition Assistance Program (SNAP), formerly known as the Food Stamp Program, is the largest federal food assistance programme in the USA, serving 46.6 million Americans in 2012 at a budget of \$US 78 billion<sup>(1)</sup>. Nearly 50% of the programme's beneficiaries are children<sup>(2)</sup>. SNAP aims to alleviate food insecurity and improve nutritional status among low-income individuals and households by increasing the resources available to purchase food. Participating households receive benefits through an

electronic benefit transfer (EBT) card that can be used at authorized food retailers to purchase most foods and beverages except for alcohol, dietary supplements, and hot or prepared foods. In 2012, the average monthly benefit was \$US 133.41 per person<sup>(1)</sup>. In the past 10 years, there has been a 158% increase in SNAP participation due in part to an economic recession; at the same time, rates of food insecurity have reached record levels<sup>(3,4)</sup>.

Historically, food insecurity in America has been associated with underweight as a result of an inadequate quantity of food intake. But the relationship between

† These authors contributed equally to this work.

body weight and food insecurity has grown more complex since the Food Stamp Program was established in 1964 due in part to changes in the food environment over the past 45 years<sup>(5)</sup>. Today food insecurity in America increasingly coincides with obesity and diets of inadequate quality for optimal health. Some cross-sectional studies show associations between SNAP participation and poorer diet quality among low-income adults; few longitudinal studies are available<sup>(6,7)</sup>.

In recent years, Congressional legislation has addressed the need to improve nutritional health among individuals, particularly children, enrolled in federal food assistance programmes. The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), established in 1972, was revised in 2009 to provide a defined food package that aligns with the Dietary Guidelines for Americans<sup>(8)</sup>. In addition, the Healthy, Hunger-Free Kids Act of 2010 required that National School Breakfast and Lunch Programs and the Child and Adult Care Food Program be modified to improve the nutritional quality of meals by meeting the Dietary Guidelines as well<sup>(9)</sup>. Although the Food, Conservation, and Energy Act of 2008 (the Farm Bill) changed the name of the Food Stamp Program to the Supplemental Nutrition Assistance Program (SNAP) in part to increase the focus on nutrition, this name change was not coupled with the enactment of policies to improve the nutritional intake of programme participants<sup>(10)</sup>.

Individuals with stakeholder interest in SNAP from academia, advocacy groups, government, health care and the food industry may have varied views about existing SNAP policies. The extent to which there is agreement among key stakeholders on strategies for modifying SNAP policies to strengthen nutrition in the programme is critical as this will influence the political feasibility and likelihood of such changes. The objectives of the present study were to assess the opinions of a broad range of SNAP stakeholders concerning (i) barriers to purchasing nutrient-dense, healthy foods within the current structure of SNAP and (ii) the perceived effectiveness of a wide variety of strategies proposed to improve the nutritional status of programme beneficiaries as well as to prevent obesity among SNAP participants.

## Methods

### *Survey population*

The research team identified a broad spectrum of individuals working on issues related to SNAP, public health, obesity, nutrition and food insecurity. The list included: state and local SNAP directors; directors of the SNAP nutrition education programme (SNAP-Ed); directors of state obesity prevention programmes and community-based obesity projects funded by the Centers for Disease Control and Prevention; leaders from anti-hunger, agricultural policy, health care and advocacy organizations; academia;

and representatives of food manufacturing and retail companies. Their contact information was collected through colleagues working in these fields and through university, government, industry and organizations' websites. The final list included 1250 individuals.

### *Survey design*

The convenience sample of 1250 respondents was asked to complete a thirty-eight-item web-based survey. The survey questions were developed from themes that emerged from interviews with twenty-seven key informants conducted in 2011, where they discussed existing challenges for SNAP participants to access nutritious foods and proposed ideas about policies implemented at the individual, retailer and government levels to improve the nutritional status of SNAP participants<sup>(11)</sup>.

The survey question format varied and included a 5-point Likert scale, yes/no and multiple-choice questions. Survey respondents were asked their opinions about how much emphasis should be placed on: nutrition in the programme; SNAP benefit amounts and frequency of benefit distribution; perceptions of existing barriers and strategies to improving nutrition in the programme; and attitudes towards imposing restrictions on as well as providing incentives for the purchase of various food items. Survey respondents were also asked to share their opinions on: mechanisms to improve the retail food environment and steps to strengthen SNAP-Ed; the collection of data about foods purchased with programme benefits; and the enhanced use of information technology and social media.

The study focused on respondents from five sectors: academia, advocacy groups, government, health care and the food industry. A pilot study was conducted with ten randomly selected survey respondents representing all sectors to evaluate the survey questions for content, clarity and length. Results of the pilot study did not change the content of the survey. The survey was sent by email to 1250 potential respondents through SurveyMonkey™ between October and December 2011. The survey included an introductory email describing SNAP and the goals of the project, requesting participation and ensuring confidentiality of responses. By continuing with the survey, respondents indicated their consent to take part in the research. Follow-up emails (occurring two weeks after the initial email) and telephone calls (occurring four weeks after the initial email) were made to non-respondents. A total of 522 individuals completed the survey out of 1250 individuals initially contacted, for an overall response rate of 42%. The study protocol was considered exempt by the Harvard School of Public Health Institutional Review Board.

### *Statistical analysis*

Stakeholders' opinions and perceptions about SNAP were assessed in the overall study population and stratified by respondents' sector. The  $\chi^2$  test and ANOVA were conducted to determine whether significant differences

existed in the patterns of responses by sector. Individuals with missing sector information were excluded from hypothesis tests, although their responses were preserved in the overall study population. All statistical analyses were performed using the statistical software package Stata/IC 12.0.

## Results

Respondents classified themselves as representing a variety of sectors: 19% worked in academia ( $n$  100), 26% worked at an advocacy/non-profit organization ( $n$  134), 26% worked in state/local/federal government ( $n$  135), 16% worked in a health care or public health field ( $n$  84) and 5% worked in the food industry, food retail or farmers' markets ( $n$  25; Table 1).

Results are reported across all stakeholder groups, organized by survey theme. Because respondents were not required to complete each question, sample sizes varied across questions.

### General attitudes about SNAP

Respondents ranked several aspects of SNAP. The most highly ranked purpose of SNAP was to 'alleviate food insecurity' (mean ranking: 8.5 out of 10), followed by to 'ensure adequate dietary intake' (mean: 7.4 out of 10) and to 'improve nutrition and overall health' (mean: 7.4 out of 10; Table 2), but 70% of respondents disagreed that the current level of SNAP benefits was adequate to maintain a healthy diet. Sixty per cent of respondents viewed SNAP as a stimulus for the economy.

Most respondents (77%) believed that foods purchased with SNAP benefits should be consistent with the Dietary Guidelines for Americans, and more than half (54%) thought that SNAP should be reformulated into a defined food package containing nutritious foods similar to the WIC. Respondents from health care and the public health sector were most likely to agree that foods purchased with SNAP benefits should be consistent with national nutrition guidelines ( $P=0.049$ ). Across all sectors, 44% of respondents agreed that SNAP benefits should be distributed twice per month rather than once, which is the current frequency of allocation, and most respondents (87%) agreed that additional SNAP benefits should be provided to families with school-aged children during the summer, when children are less likely to have access to free- or reduced-price school meals (data not shown).

### Barriers and strategies to improving nutrition for SNAP participants

Respondents identified barriers that influence the nutrition of SNAP participants and incentives that may encourage programme beneficiaries to purchase healthier foods (Table 3). The top three barriers to improving nutrition were: (i) unhealthy foods heavily marketed in

**Table 1** Characteristics of the survey respondents ( $n$  522) with stakeholder interest in SNAP, October–December 2011

	<i>n</i>	%
<b>Primary sector</b>		
Academia	100	19
Advocacy/non-profit	134	26
Government	135	26
Health care	84	16
Industry/retailer/farmers' market	25	5
Multi-sector	17	3
Other	27	5
<b>Geographic region</b>		
National	60	12
West	111	21
Midwest	86	17
Northeast	118	23
South	140	27
Pacific	3	1
<b>Years of experience in SNAP</b>		
0–2 years	59	11
3–5 years	77	15
6–10 years	94	18
11–15 years	74	14
16–20 years	41	8
21+ years	92	18
I do not work on SNAP	82	16

SNAP, Supplemental Nutrition Assistance Program.

low-income communities (55%); (ii) the high cost of healthy foods (e.g. fruits and vegetables; 50%); and (iii) other lifestyle challenges such as stress and time constraints that are frequently faced by low-income individuals and families (47%).

The two incentives perceived to have the greatest potential to improve the diets of SNAP recipients were to provide vouchers and/or coupons given for the purchase of healthy foods (mean ranking: 8.7 out of 10) and monetary incentives added to the EBT card to purchase fruits and vegetables (mean: 8.6 out of 10). Modifying the list of eligible foods that can be purchased with SNAP benefits was also perceived as a method to improve nutrition among recipients. The majority of respondents (78%) agreed that sodas should not be eligible for purchase with SNAP benefits; there was no significant difference between sectors. Additionally, 74% agreed that other 'foods of low nutritional value' should be removed from the list of eligible foods under SNAP. When prompted which foods or beverages should be restricted, the three top items were (i) soda (non-diet), (ii) candy and (iii) other sugar-sweetened beverages (such as fruit punch or lemonade). Many respondents (55%) believed it would be 'easy' for retailers to implement such changes.

### Improving the retail food environment for SNAP participants

Respondents rated increasing the availability of healthy food options in retail outlets in low-income communities as the change to the food environment that would have the greatest impact on improving the nutritional status of SNAP participants (mean ranking: 7.9 out of 10; Table 4).

**Table 2** General attitudes about SNAP of the survey respondents (*n* 522) with a stakeholder interest, October–December 2011

	By sector														<i>P</i>
	Overall		Academia		Advocacy		Government		Health care		Industry				
	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %			
<b>General attitudes</b>															
What do you view as the purpose of SNAP? (mean and SD)															
To provide income assistance	6.7	2.7	6.5	2.7	7.1	2.8	6.4	2.9	6.4	2.6	6.3	2.6	0.22		
To alleviate food insecurity	8.5	2.8	8.4	3.0	8.6	2.8	8.7	2.7	8.4	2.9	7.5	3.3	0.48		
To ensure adequate dietary intake	7.4	2.8	7.0	2.8	7.7	2.6	7.6	2.8	7.1	2.8	7.2	3.2	0.29		
To improve nutrition and overall health	7.4	2.7	7.0	2.7	7.5	2.8	7.6	2.7	7.3	2.8	7.0	3.3	0.58		
Do you view SNAP as a stimulus for the US economy? ( <i>n</i> and %)															
Yes	291	60	60	65	79	64	85	66	33	42	12	55	0.01		
No	130	27	17	18	32	26	28	22	33	42	6	27			
Not sure	68	14	16	17	13	11	15	12	13	17	4	18			
<b>Attitudes towards SNAP enrolment</b>															
Barriers that prevent SNAP-eligible people from enrolling in the programme ( <i>n</i> and %)															
Fingerprinting requirements of SNAP applicants in some states	123	33	25	36	42	46	30	25	16	29	3	23	0.12		
Mandatory interview for SNAP applicants	108	29	23	33	28	31	31	26	11	20	5	39	0.44		
Stigma attached to SNAP	239	64	40	58	57	63	77	64	33	60	9	69	0.03		
Low benefit levels not worth hassle of the application process	182	49	40	58	39	43	60	50	25	46	2	15	0.002		
Distance from SNAP enrolment facilities	100	27	21	30	25	28	24	20	18	33	4	31	0.93		
Length of SNAP application	138	37	21	30	37	41	50	41	17	31	5	39	0.02		
Inability to fill out the SNAP application online	111	30	28	41	30	33	21	17	17	31	4	31	0.2		
Lack of awareness of SNAP eligibility	228	62	41	59	60	66	65	54	35	64	8	62	0.56		
<b>Attitudes towards benefits distribution (<i>n</i> and %)</b>															
The current amount of SNAP benefits is adequate for participants to maintain a healthy diet															
Strongly agree/moderately agree	105	21	20	21	14	11	32	24	23	30	9	45	<0.001		
Neutral	42	9	14	14	4	3	13	10	6	8	2	10			
Strongly disagree/moderately disagree	346	70	63	65	108	86	86	66	48	62	9	45			
SNAP participants already purchase generally healthy foods using their benefit dollars															
Strongly agree/moderately agree	116	25	20	23	36	32	36	29	13	18	3	14	0.04		
Neutral	107	23	24	28	31	28	21	17	14	19	5	24			
Strongly disagree/moderately disagree	234	51	43	49	44	40	68	54	47	64	13	62			
How frequently should SNAP benefits be distributed?															
Once per month	75	17	11	12	15	14	36	31	7	10	3	15	0.001		
Twice per month	191	44	40	45	41	39	47	41	35	49	7	35			
Weekly	57	13	11	12	20	19	4	3	11	16	5	25			
Allow SNAP recipients to choose	116	26	27	30	29	28	29	25	18	25	5	25			
<b>Attitudes towards programme nutrition (<i>n</i> and %)</b>															
Foods purchased with SNAP dollars should be required to meet USDA Dietary Guidelines															
Yes	297	77	54	74	62	69	78	74	60	88	18	86	0.049		
No	91	24	19	26	28	31	27	26	8	12	3	14			
SNAP benefits should be turned into a defined food package following USDA guidelines, similar to WIC															
Strongly agree/moderately agree	259	54	48	52	55	46	70	55	55	71	10	50	0.048		
Neutral	56	12	7	8	17	14	12	9	8	10	3	15			
Strongly disagree/moderately disagree	164	34	37	40	49	41	46	36	15	19	7	35			

SNAP, Supplemental Nutrition Assistance Program; USDA, US Department of Agriculture; WIC, Special Supplemental Nutrition Program for Women, Infants, and Children.

**Table 3** Barriers and strategies to improving nutrition for SNAP participants according to survey respondents (*n* 522) with a stakeholder interest, October–December 2011

	By sector												<i>P</i>
	Overall		Academia		Advocacy		Government		Health care		Industry		
	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	
Top barriers to improving the nutrition of SNAP participants ( <i>n</i> and %)													
Healthy foods (e.g. fruits and vegetables) are expensive	250	50	49	50	65	51	62	48	43	54	11	50	0.94
SNAP participants lack access to retailers selling healthy foods	218	44	48	49	71	56	44	34	30	38	7	32	0.003
Unhealthy foods are heavily marketed in low-income communities	275	55	47	48	76	60	69	54	50	63	9	41	0.16
Low-income households face unique lifestyle challenges (stress, time constraints)	232	47	58	59	51	40	62	48	31	39	13	59	0.02
Few restrictions on what foods SNAP recipients can purchase	167	34	28	28	35	28	51	40	39	49	9	41	0.02
SNAP participants lack knowledge about a healthy diet	144	29	26	26	30	24	37	29	28	35	8	36	0.47
SNAP benefits do not last through the month	109	22	20	20	34	27	31	24	11	14	3	14	0.18
Incentives													
Rank the incentives that would best encourage SNAP participants to purchase healthier foods (mean and SD)													
Nutrition education materials	5.1	2.6	5.1	2.5	5.0	2.7	5.3	2.5	4.7	2.3	5.5	2.8	0.54
Vouchers/coupons given for the purchase of healthy foods	8.7	1.8	8.9	1.5	8.3	2.0	8.9	1.5	8.7	2.0	8.3	2.0	0.04
Free or low-cost transportation to farmers markets or other retailers that stock healthy, affordable foods	6.6	2.4	6.8	2.3	6.7	2.5	6.6	2.4	6.4	2.3	6.3	2.5	0.8
Monetary incentives added to participant EBT cards for the purchase of fruits and vegetables	8.6	2.1	9.1	1.4	8.8	2.1	8.5	2.4	8.5	2.1	8.2	2.4	0.13
In-store or point-of-purchase marketing of healthy foods	6.0	2.4	5.9	2.5	5.9	2.4	6.2	2.2	5.9	2.4	6.3	2.9	0.69
Restrictions													
Do you believe there should be restrictions on purchasing certain foods with SNAP dollars? ( <i>n</i> and %)													
There should be restrictions on purchasing soda with SNAP dollars	380	78	74	80	90	72	96	74	72	90	16	67	0.12
There should be restrictions on purchasing soda and other foods of low nutritional value with SNAP dollars	358	74	67	74	82	68	91	71	70	88	16	76	0.12
There should be restrictions on purchasing hot and cold prepared foods with SNAP dollars	155	33	23	26	29	24	43	34	36	46	9	45	0.002
How easy would it be for retailers to implement purchasing restrictions?													0.3
Very easy/somewhat easy	250	55	51	59	61	53	58	49	46	64	13	62	
Neutral	25	6	3	4	8	7	5	4	6	8	1	5	
Very difficult/somewhat difficult	176	39	32	37	47	41	56	47	20	28	7	33	

SNAP, Supplemental Nutrition Assistance Program; EBT, electronic benefit transfer.

**Table 4** Strategies for improving the retailer food environment for SNAP participants according to survey respondents (*n* 522) with a stakeholder interest, October–December 2011

	By sector														<i>P</i>
	Overall		Academia		Advocacy		Government		Health care		Industry				
	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %	Mean or <i>n</i>	SD or %			
Rank the changes to the retail food environment that would most positively benefit SNAP participants (mean and SD)															
Assist small retailers in purchasing healthy foods in bulk	6.4	2.5	6.7	2.6	6.2	2.5	6.6	2.4	6.1	2.2	5.3	2.8	0.21		
Create strict requirements for certifying stores as SNAP retailers	5.6	2.8	5.0	2.3	5.7	2.9	5.9	2.8	6.0	3.2	6.1	3.5	0.16		
Incentivize the establishment of retail outlets stocking healthy options in low-income communities	7.9	2.4	8.2	2.2	8.0	2.3	7.8	2.5	7.6	2.4	8.1	1.7	0.63		
Increase participation in Community Sponsored Agriculture, Farm to School, and/or community gardens	6.1	2.8	6.0	2.6	6.2	2.8	5.8	2.8	6.2	2.8	6.0	2.6	0.75		
Which partnership would best increase SNAP participants' access to healthy foods? ( <i>n</i> and %)															
Support mobile food pantries in collaboration with food banks or non-profit organizations	76	19	8	10	25	25	16	15	12	18	5	31	0.07		
Support small stores with the purchase of refrigeration equipment or bulk purchases of foods	94	24	20	26	26	26	23	22	14	21	3	19			
Link SNAP participants with community gardens/gardening programmes	53	13	12	16	4	4	16	15	14	21	3	19			
Work with food distributors to make it easier for retailers to purchase and stock healthy foods	175	44	37	48	44	44	51	48	28	41	5	31			
Should stores be required to stock a minimum quantity of healthy foods in order to be a certified SNAP retailer? ( <i>n</i> and %)															
Yes	278	58	52	57	76	62	73	58	42	54	14	67	0.92		
No	29	6	5	5	7	6	9	7	5	6	2	10			
Depends on mandate structure	174	36	35	38	40	33	44	35	31	40	5	24			
What actions need to be taken to ensure that SNAP participants can use their benefits at farmers' markets? (mean and SD)															
Expand the use of EBT cards at farmers' markets	8.8	1.8	8.8	1.6	9.0	1.7	8.8	1.9	8.6	2.1	8.4	2.1	0.45		
Provide transportation to farmers' markets	6.0	2.4	5.9	2.4	6.1	2.6	6.0	2.2	5.4	2.4	5.8	2.3	0.43		
Strategically locate farmers' markets in communities	7.9	2.1	7.8	1.9	8.1	1.8	7.9	2.2	7.5	2.5	7.3	2.7	0.22		
Incentivize the purchase of fruits and vegetables at farmers' markets	8.2	2.2	8.5	1.9	8.5	2.0	8.2	2.3	8.2	2.2	7.7	2.8	0.46		
Modify the hours and days that farmers' markets are open	5.7	2.6	5.7	2.6	6.0	2.7	5.7	2.5	5.7	2.6	3.9	2.2	0.03		



Over half of survey respondents (58%) believed that stores should be required to stock a minimum quantity of nutrient-dense foods in order to be a certified SNAP retailer. The second most highly rated proposed change included assisting small retailers to purchase nutrient-dense foods in bulk (mean: 6.4 out of 10). To improve SNAP participants' access to fresh fruits and vegetables, survey respondents highly ranked expanding the ability to use EBT cards at farmers' markets (mean: 8.8 out of 10) and incentivizing the purchase of fruits and vegetables at these venues (mean: 8.2 out of 10).

### ***Enhancing nutrition education***

SNAP-Ed is an optional state activity that aims to improve the likelihood that SNAP participants, and other low-income Americans, will make healthy food choices within a limited budget and choose active lifestyles consistent with the 2010 Dietary Guidelines for Americans<sup>(12)</sup>. The 2010 Healthy, Hunger-Free Kids Act called for changes that included the use of multilevel and public health approaches, and grant funding instead of federal financial participation, or state shared matching funds<sup>(9)</sup>. Furthermore, the SNAP-Ed budget was capped through 2018 at 2009 levels, or about 0.5% of the overall SNAP budget. Final regulations to implement the statute are pending. While more respondents rated SNAP-Ed as effective rather than ineffective, most (88%) agreed that SNAP should be updated to align its nutrition information and messaging with other federal nutrition assistance programmes (data not shown). Nearly all respondents (92%) ranked parents with young children as one of the top three target groups on which SNAP-Ed should focus its messages and resources, followed by elementary school-aged children and adolescents. Additionally, survey respondents had positive attitudes (73%) regarding increasing the utilization of information technology and social media as educational and outreach tools with SNAP participants (data not shown).

### ***Future research directions***

The majority of respondents (83%) agreed that the US Department of Agriculture (USDA) should collect detailed information on what foods are purchased with SNAP benefits. However, currently, data collected by individual grocery stores are deemed proprietary and not publicly available.

Respondents prioritized three areas where more research is needed to improve the dietary quality of SNAP recipients: (i) examining the effectiveness of incentives for fruit and vegetable purchases on improving dietary quality among SNAP beneficiaries (mean ranking: 8.2 out of 10); (ii) documenting the link between SNAP participation and children's health outcomes (mean: 8.0 out of 10); and (iii) understanding SNAP participants' ability to access healthy foods in their neighbourhood (mean: 7.9 out of 10; data not shown).

## **Discussion**

The present study of diverse SNAP stakeholders demonstrates both the importance and the complexity of the path forward to improving nutritional status among SNAP recipients in the years ahead. Stakeholder respondents agreed that the principal purposes of SNAP are to alleviate food insecurity, ensure adequate dietary intake, and improve participants' nutrition and overall health. However, the pathway to accomplishing these goals requires the implementation of multiple strategies, including new policies that address food quality (not just the provision of food resources) to reduce food insecurity and disparities in obesity and diet-related chronic disease risk among SNAP participants<sup>(13)</sup>.

Developing innovative strategies for SNAP that simultaneously support good health while combating hunger, obesity and chronic disease risk has proved challenging to date. Recent reports issued by the Institute of Medicine and the Center for the Study of the Presidency and Congress underscore the importance of aligning federal food assistance programmes with the Dietary Guidelines for Americans which includes a goal of limiting excess consumption of energy from added sugars and solid fats in foods and beverages<sup>(14,15)</sup>. The present study shows there is stakeholder support for providing financial incentives for the purchase of fruits and vegetables and for removing sugar-sweetened beverages from the list of eligible foods in SNAP. Research has revealed the negative impact of sugar-sweetened beverages on health<sup>(16–21)</sup>. However, limiting the food choices of SNAP recipients has been perceived by particular stakeholders (e.g. some anti-hunger advocates) as stigmatizing and unfair to low-income SNAP recipients<sup>(14)</sup>, and there is concern about the effectiveness and feasibility of placing limitations on the types of foods and beverages that can be purchased with SNAP benefits<sup>(22)</sup>. For instance, when New York City requested a waiver to limit the purchase of sugar-sweetened beverages with SNAP benefits, the USDA rejected this proposal due to concerns about the feasibility of monitoring the initiative's health impact and implementation at the retail level<sup>(23)</sup>. In our study, however, most survey respondents believed that EBT technology would make the implementation of this type of proposal feasible for retailers. More flexibility for USDA waivers is needed to allow states and municipalities to test and evaluate promising new strategies to improve nutritional health and prevent obesity among SNAP participants.

Providing financial incentives to purchase nutrient-dense foods was a widely supported strategy in the present study although these types of programmes will likely incur additional costs. Programmes such as the USDA-funded Healthy Incentives Pilot in Massachusetts (which provides incentives to SNAP recipients at the point of sale to increase their purchase of fruits and vegetables) and privately funded initiatives that double the value of SNAP

benefits at farmers' markets and some farm stands are favourable among SNAP participants and policy advocates, although their effects on increasing fruit and vegetable consumption have been marginal<sup>(24,25)</sup>. In the current economic climate, the national scale-up of these types of programmes may be challenging. There is also concern that farmers' markets are seasonal and geographically limited so that many SNAP participants would not benefit from this type of initiative. Although the percentage of SNAP dollars spent at farmers' markets increased by 94% between 2008 and 2009, purchases at these venues still accounted for only 0.009% of total SNAP transactions nationwide in 2009<sup>(26)</sup>.

The present study underscores the critical importance of pilot studies to examine diverse strategies to improve the nutritional health of SNAP recipients. Because the USDA has been unable to collect data on the purchases of SNAP recipients, knowledge of what foods and beverages are bought through the programme is limited. As a result, it has been difficult to assess which products are most frequently purchased with SNAP benefits. One strategy may be to encourage the USDA to collect data on the types of foods and beverages purchased with SNAP benefits to evaluate nutritional quality. Additionally, data on all food purchases would help to illuminate whether the programme is contributing to the obesity epidemic among recipients and would serve as a valuable tool for researchers to assess the programme's effectiveness and to evaluate policies and interventions aimed at strengthening nutrition in SNAP.

## Limitations

The present study represents an initial effort to present an assessment of multiple stakeholders' views about innovative approaches to align SNAP participants' food and beverage purchases with the 2010 Dietary Guidelines for Americans. However, there are several limitations that must be acknowledged. First, there are three important stakeholder groups who were not represented in our study population: SNAP participants, SNAP retailers (particularly owners of small grocery stores) and the general public, which supports SNAP through federal taxes. However, we recently used a national polling service to study the views of SNAP participants and the general public, and found results similar to the survey of stakeholders<sup>(27)</sup>. Among SNAP participants, 54% supported removing programme benefits for sugary drinks; and this number increased to three out of four surveyed if the policy was paired with financial incentives to purchase healthy food. Among the general public, 77% supported continued or increased funding for SNAP, but 69% supported removing sugary drinks (such as soda) from the list of SNAP-approved products. Similarly, surveys of SNAP retailers would be informative in

understanding how changes in the programme's policies would affect their business and what support could be given to smaller SNAP retailers to stock healthier foods in their stores.

A second limitation of the study is the potential for selection bias from the convenience sample, where those who responded to the survey might possess a greater interest in changing SNAP policies than individuals who did not respond to the survey. Because study participants completed a web-based survey, we were unable to compare basic characteristics of study participants with those of survey non-respondents. This comparison would have helped to understand whether the study participants were representative of the general SNAP stakeholder groups. Second, some survey respondents ( $n$  82) indicated they were not directly involved with the programme, making it difficult to quantify their knowledge or experience with SNAP. However, when these respondents were excluded from the analysis, the results of the study did not change (data not shown). Further, some sector categories were heterogeneous. For example, within the category of advocacy groups are anti-poverty organizations, sustainable agriculture groups and public health organizations, which might have very different opinions on an issue. Further research is needed to understand their views. Additionally, because of a low response rate from the food industry (including retailers and manufacturers), the survey results reflect an oversampling of other stakeholder groups. Thus, caution should be used in generalizing the study findings to the larger population of SNAP stakeholders.

## Conclusions

Our assessment of the opinions of a broad range of stakeholder groups reveals that there is wide support for new approaches to improve the nutritional status of SNAP participants<sup>(15)</sup>. Given that one in seven Americans is now receiving SNAP benefits (nearly 50% of whom are children), the impact of the triple burden of food insecurity, obesity and chronic disease in this population highlights an urgent need to strengthen SNAP to address the challenge of eating healthily on a limited budget<sup>(1,2,7)</sup>. Further attention should be given to policies that strengthen retail requirements, foster marketing of healthy foods, create incentives for SNAP participants to access and purchase healthier foods, and limit the purchase of unhealthy foods with SNAP benefits. Pilot programmes should be supported that operationalize interventions identified in the current study to determine their effectiveness, feasibility and cost. Data collection about food purchased by programme recipients is critical to future policy development for the programme.

The research offers policy makers options to consider during deliberations for strengthening SNAP, a key component of the Farm Bill, the primary agricultural and food

policy legislation that is reauthorized approximately every 5 years by the US Congress.

The findings from the present survey provide a foundation for more discussion about ways to reformulate SNAP now and in the future to alleviate hunger, promote the consumption of nutritious food and help prevent obesity among its beneficiaries. SNAP is a critical programme with the potential to enhance the diets of more than 44.7 million Americans. However, as currently configured, the programme is a missed opportunity to improve nutrition and prevent obesity for its participants. Aligning SNAP with national public health priorities is a matter of urgency to ensure a healthier future for the low-income beneficiaries of this vital federal nutrition assistance programme.

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