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IMPLEMENTATION OF USDA SMART SNACK STANDARDS IN MINNESOTA SECONDARY SCHOOLS

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ABSTRACT

PURPOSE/OBJECTIVES: This study aimed to describe efforts by Minnesota public School Food Authorities (SFAs) to implement the Smart Snack regulations in secondary schools and challenges associated with implementing these regulations five years after they went into effect.

METHODS: Public SFAs (n=452) in Minnesota were invited to complete an online survey that included up to 32 questions related to implementation of Smart Snack regulations in their competitive food sales: a la carte, vending machines, fundraisers, school stores/snack carts. Question formats included open-ended, multiple choice, select all that apply, and rating scale response from the following options: *strongly disagree*, *disagree*, *agree*, *strongly agree*, *unsure/not applicable*. Frequency of responses was calculated for each question with qualitative data analysis methods used to analyze responses to open-ended questions.

RESULTS: A total of 247 responses was received (55% response rate). Most participants (95%) indicated they *agree* or *strongly agree* that they felt knowledgeable about the Smart Snack regulations, but over half (53.2%) indicated they *agree* or *strongly agree* that Smart Snacks are difficult to implement in secondary school sites. For all types of competitive food sales, the most frequent action taken in response to the Smart Snack regulations was to replace non-compliant foods with compliant foods. Failure to take action in response to Smart Snack regulations was reported as highest for fundraisers (18.9%) and school stores/snack carts (7.1%).

CONCLUSIONS: The strategies and challenges identified in this study could be used to create targeted training and education materials to support school districts' efforts to comply with Smart Snack regulations.

KEY WORDS: Smart Snacks, competitive foods, Healthy Hunger-Free Kids

INTRODUCTION

The National School Lunch Program (NSLP) and School Breakfast Program (SBP), which are administered by the United States Department of Agriculture (USDA) Food and Nutrition Service (FNS), were most recently reauthorized by the United States Congress through the Healthy, Hunger-Free Kids Act of 2010 (HHFKA) (USDA, 2018). The HHFKA included a number of regulatory changes, including added restrictions on foods sold in competition with meals reimbursed through the NSLP and SBP (hereafter referred to as the Smart Snacks rule). The Smart Snacks rule in the HHFKA expanded foods that must meet nutrition criteria to include all foods sold on the school campus at any time during the school day such as foods sold in a la carte lines, vending machines, school stores, and some fundraising events (NSLP and SBP, 2016). This Smart Snacks rule, which took effect beginning in the 2014-2015 school year, requires that snack, entrée, and beverage items sold outside of the reimbursable meal must meet certain nutrition requirements including: containing 50% or more whole grains by weight (for grain products); having a fruit, vegetable, dairy product, or protein food as a first ingredient; or being a combination food that contains at least ¼ cup of fruit or vegetable (USDA, 2016). In addition, all foods must meet specific nutrient standards for calories, sodium, sugar, and fats (USDA, 2016). There are a variety of resources available through the USDA, State Agencies, and other organizations to assist in determining whether food items meet Smart Snack regulations (Minnesota Department of Education [MDE], n.d.).

State agencies, who administer USDA school nutrition programs, are responsible for conducting administrative reviews covering all programs areas, including compliance with Smart Snacks regulations. Smart Snacks regulations have been part of the review process for every School Food Authority (SFA) in Minnesota at least once, as administrative reviews are conducted every three years by MDE (MDE, 2018). During this time, MDE nutrition consultants have identified unique challenges in assessing Smart Snacks and providing technical assistance to SFAs due to disconnection between the school food service departments and other locations in the district not under their control where foods and beverages may be sold to students. It remains unclear how well SFAs in Minnesota have implemented the Smart Snack regulations. Further, the barriers to implementation, as well as strategies used for effective implementation from the perspective of SFAs, are unknown.

Previous studies have investigated implementation, compliance, and impacts of state-level competitive food and beverage policies (Hoffman et al., 2015; Rosenfeld et al., 2017; Samuels, Hutchinson, Craypo, Barry, & Bullock, 2010; Whatley et al., 2007). After Massachusetts enacted a statewide school nutrition bill in 2010 (taking effect in 2012), the Nutrition Opportunities to Understand Reforms Involving Student Health (NOURISH) study examined many aspects including compliance, students' food consumption, effects on revenue, and implementation strategies (Gorski et al., 2016, Hoffman et al., 2018). Rosenfeld et al. (2017) used a mixed-methods approach to gather Massachusetts school food service directors' experiences implementing the standards, and identified several themes and best practices. The results of these studies indicated that changes were not easy, but resulted in healthier food and beverage options (Hoffman et al., 2015; Rosenfeld et al., 2017; Samuels et al., 2010; Whatley et al., 2007). Recently, Asada, Chriqui, Chavez, Odoms-Young, and Handler (2016) examined the implementation of the HHFKA Smart Snack legislation by using a multiple case study approach to interview school professionals (n=37) from 9 high schools across 8 states about their perceptions implementing the policies. This study contributed evidence of best practices by identifying key themes including the importance of positive recognition, internal and external

partnerships, strategic communication to change perceptions, and continued time and effort to achieve implementation and acceptance (Asada et al., 2016).

The purpose of the present study was to identify barriers and needs of public school district SFAs in one Midwestern state with implementation of the HHFKA Smart Snacks regulations in secondary schools. This study also sought to identify the strategies used by these SFAs to meet the Smart Snack regulations.

METHODOLOGY

Between January and February of 2019, an online survey was conducted with public school district contacts regarding their secondary school sites. A listing of 469 public school districts SFAs with the names and contact information (email addresses) of food service department contacts was downloaded from the MDE website. Duplicate contacts who represented more than one district, due to part-time positions or food service management contracts, for example, were removed. The final email list consisted of 452 contacts. These potential participants were notified of the study by an email from MDE's School Nutrition Programs supervisor three days prior to the first survey invitation. The email from the MDE supervisor included basic information about the study and encouraged their participation. Potential participants received a detailed email inviting them to participate in the study. This invitation included a description of the study's purpose, instructions for completing the survey, and information about an incentive (a $5 gift card to a discount retailer). Only recipients of this email were able to access and complete the survey in order to prevent receiving multiple responses describing the same school district. A modified version of Dillman's Tailored Design Method was used to maximize participation (Dillman, 2007). Each week, potential participants who had not yet completed the survey received a reminder email. In total, three reminder emails were sent throughout a 4-week data collection period.

The online survey topics and questions were developed by the research team with assistance from specialists at MDE. The survey was also pre-tested with a school nutrition specialist (who would not be invited to complete the survey) to review content, wording of questions, and time taken to complete the survey. The final online survey used branched logic to collect information with a series of closed- and open-ended questions to assess respondents' perspectives and experiences regarding Smart Snack regulations in the secondary school sites (defined as grades 6 and above). Closed-ended questions consisted of multiple choice (n=18), select all that apply (n=3), and rating scale response (two sets with a total of 17 statements) formats. Open-ended, short-answer questions (n=9) were also included to probe for further elaboration on closed-ended responses.

Participants were asked what types of competitive food sales occur in their secondary school sites from options of vending machines, fundraisers, a la carte sales, and school stores/snack carts and specific questions related to each type of sales identified. All respondents were asked additional questions regarding ala carte sales and food-based fundraisers to gather more information about these types of food sales in secondary schools. As well, all respondents were asked to indicate how strongly they agreed or disagreed with a series of statements from a scale of *strongly agree*, *agree*, *disagree*, *strongly disagree*, or *unsure/not applicable*. Demographic information about respondents and the districts they represented was also collected.

Data analyses consisted of calculating frequencies for closed-ended questions. For qualitative questions, a single investigator manually reviewed responses to identify common themes. Then,

responses were sorted into these themes so that responses may be reported in terms of relative commonness.

RESULTS AND DISCUSSION

Results from this study described various actions taken by Minnesota public school districts as of early 2019 to comply with the Smart Snack regulations in their secondary schools since these rules took effect at the start of the 2014-2015 school year. Findings also provided a description of both the challenges faced and successful strategies used in implementing the new regulations.

Table 1: Characteristics of Survey Respondents and the School Districts Represented

	%	n
Role/Position in the School District (n=219)		
Food Service Director	81.3	178
Kitchen Manager / Head Cook	11.0	24
Other Nutrition Program staff	3.2	7
Administrator (principal, director, superintendent)	3.2	7
Business Manager	1.4	3
School District Location (n=219)		
Greater Minnesota (outside of Twin Cities metro area)	76.7	168
Twin Cities metro area	23.3	51
Number of Students in the School District (n=220)		
Less than 500	29.1	64
501 - 2,499	44.1	97
2,500 - 9,999	22.3	49
Above 10,000	4.6	10
Number of Secondary School Sites in School District (n=220)		
0	6.3	14
1	59.1	130
2	18.2	40
3	7.7	17
4	1.8	4
5	1.8	4
>5	5.0	11
Types of Food Sales in Secondary Schools (n=239)		
A la carte Sales	70.7	169
Vending Machines	51.0	122
Fundraisers	47.7	114
School Store/ Snack Cart	30.5	73

Discontinuation of Food Sales by Type (n=231)		
A la carte Sales	5.6	13
Vending Machines	14.7	34
Fundraisers	11.3	26
School Store/ Snack Cart	6.5	15
None	71.0	164

Respondents' Demographic Information

Of the 452 surveys distributed to the listed contacts, 247 responses were received (55% response rate). Participants identified their titles as food service director (n=178, 81.3%), kitchen manager/head cook (n=24, 11.0%), administrator (n=7, 3.2%), other nutrition program staff (n=7, 3.2%), and business manager (n=3, 1.4%; Table 1). Data on the school location (Twin Cities metro area or Greater Minnesota), number of students enrolled (less than 500, 501-2,499, 2500-9,999, or above 10,000), and number of secondary school sites are also presented in Table 1.

Smart Snacks Knowledge Perceptions and Resources Used

Participants were asked to indicate which resources were most often used to gather information about Smart Snack regulations; 240 participants responded to this question. The most frequently used resources were from MDE (n=215, 89.6%), USDA (n=157, 65.4%), food distributors or product manufacturers (n=124, 51.7%), professional organizations (n=41, 17.1%), and "other" (n=17, 7.1%). When asked specifically how they determined if a food item is Smart Snack compliant, participants reported using a Smart Snack calculator (n=184, 76.7%), information from food distributors or product manufacturers (n=115, 47.9%), calculations done themselves (n=33, 13.8%) or using information from professional organizations (n=21, 8.8%).

Overall, 95.0% (n=210) of 220 responsesindicated they *agree* or *strongly agree* with the statement "I feel knowledgeable about the Smart Snack regulations" while 54.3% (n=120) selected *agree* or *strongly agree* that "Other staff in the district understand Smart Snack regulations." Close to one-fifth (n=40, 18.1%) of participants indicated they *agree* or *strongly agree* that "It is difficult to determine whether food items are Smart Snack compliant." Over one-half of 221 respondents (n=117, 53.2%) selected *agree* or *strongly agree* that "It was difficult to implement the Smart Snack regulations in the secondary school sites."

A la carte Sales

A la carte sales was the most frequently reported type of competitive food sales(n=169, 70.7%; Table 1). About 5% of participants (n=13) indicated that a la carte sales had been discontinued in their secondary sites in response to Smart Snack regulations. Those with a la carte food offerings were asked to indicate what actions were taken in secondary schools in response to the Smart Snack regulations. Replacing non-compliant foods with compliant substitutions was the most frequently reported action (n=100, 61.4%), followed by taking no action because foods were already compliant (n=41, 25.2%), and removing non-compliant foods (n=19, 11.7%; Table 2). Only three respondents indicated that an 'other action' had been taken. These 'other' actions included relying on contractors and only selling milk as an a la carte item. When asked whether someone in the district was responsible for ensuring that a la carte foods in secondary schools met Smart Snack standards, nearly all respondents (n=162, 99.4%) responded "Yes".

When asked whether their district uses recipes to make any a la carte food items from scratch, about 41% of the respondents (n=88) selected "Yes". Respondents were also asked whether their district had introduced any new Smart Snack compliant foods that were well-received by students. Those who responded "Yes" (n=94, 45.9%) were asked to list these items, with the most common including smoothies, cookies (both "homemade" and packaged), yogurt parfaits, coffee drinks, packaged snacks, frozen treats, and muffins (both "homemade" and packaged).

Table 2: Actions taken by School Food Authorities in response to Smart Snack Regulations for Competitive Food Sales

	A la carte Sales (n=163)		**Vending Machines (n=122)**		**Fundraisers (n=111)**		**School Store / Snack Cart (n=70)**	
	%	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Replaced non-compliant foods with compliant substitutions	61.4	100	54.1	66	23.4	26	50.0	35
No action required because all foods were already compliant	25.2	41	13.9	17	6.3	7	24.3	17
Removed non-compliant foods	11.7	19	9.8	12	17.1	19	8.6	6
Other	1.8	3	14.8	18	17.1	19	1.4	1
No actions taken yet	0	0	0.8	1	18.9	21	7.1	5
Don't know what actions have been taken	0	0	6.6	8	17.1	19	8.5	6

VENDING MACHINES

About one half (n=122, 51.0%) of all participants indicated their district had vending machines in their secondary school sites at the time of the survey (Table 1) while 14.7% (n=34) of participants indicated that vending machines had been removed in response to Smart Snack regulations. Those who had indicated having vending machines were asked what actions were taken in their secondary schools in response to the Smart Snack regulations. Replacing non-compliant foods with compliant substitutions was the most frequently reported response by these participants (n=66, 54.1%) followed by not taking any action because vending items were already compliant (n=17, 13.9%) and removing non-compliant foods (n=12, 9.8%; Table 2). About 15% (n=18) of school districts indicated an 'other action' was taken with the majority of these related to turning vending machines off during school hours. Some indicated that other staff in charge did not care about the regulations, or the district relied on the vendors to fill the machines with compliant items. When asked whether someone in the district was responsible for ensuring that foods sold in vending machines meet Smart Snack standards, 88.0% indicated that someone was responsible.

FUNDRAISERS

Almost half (n=114, 47.7%) of participants indicated that their district had fundraisers as a type of food sales in their secondary school sites, while 11.3% (n=26) of all participants reported discontinuing all food-related fundraisers in response to Smart Snack regulations.

Actions taken by SFAs to bring fundraisers into Smart Snack compliance at secondary schools included replacing non-compliant foods with compliant substitutions (n=26, 23.4%), taking no action yet (n=21, 18.9%), removing non-compliant foods without replacement (n=191, 7.1%), taking "other" actions (n=19, 17.1%), not knowing what actions had been taken (n=9, 17.1%), or not taking any action because all food sales were already compliant (n=7, 6.3%; Table 2). Of respondents who entered "other" actions, the most common "action" taken involved informing other staff, such as principals, but not having the authority to make changes to fundraising followed by educating and training of other staff and not allowing fundraisers during school hours. Of the participants that responded that no action had been taken, explanations included lack of support and resistance from other staff and administrators who are involved in these sales, being unaware of the regulations for fundraisers, or just beginning to understand the regulations and work toward compliance. About 70% of respondents (n=58) indicated that someone in their school district is responsible for ensuring foods sold as part of fundraisers in secondary schools meet Smart Snack standards.

Additionally, about 60% of respondents (n=94) indicated that their school district has a process or procedure for ensuring that food-based fundraisers are Smart Snack compliant before they occur. Of those, about 79% explained their district's process or procedure for approving food-based fundraisers. Most commonly, the process involved the student group hosting the fundraiser to request approval from the food service director (n=29, 39.2%). Respondents noted that food service directors may review fundraiser proposals on a case-by-case basis, provide a list of approved items that may be sold as part of a fundraiser, or purchase the Smart Snack compliant food items for the use of fundraisers. However, several of these responses indicated low confidence that these procedures were always utilized or that fundraiser organizers were aware that a procedure for approval needed to be followed. The next-most-common procedure was to not allow fundraisers during school hours (n=13, 17.6%). Other procedures identified less frequently involved student groups seeking approval from the school principal, other administration, or a combination of administration and food service staff, incorporating language about fundraisers into wellness policies, or using staff training.

School Stores / Snack Carts

Close to one-third (n=73, 30.5%) of participants indicated that their districts currently sold foods through school stores or snack carts in their secondary school sites (Table 1). About 7% (n=15) of respondents reported discontinuing food sales through school stores or snack carts in response to Smart Snack regulations. Half of respondents (n=35) who sell food through school stores or snack carts indicated that they had replaced non-compliant foods with compliant substitutions in order to be compliant with Smart Snack standards. Some reported that no action was required because all foods were already compliant (n=17, 24.3%). Fewer respondents reported that they removed non-compliant foods (n= 6, 8.6%), didn't know what had been done (n=6, 8.6%), or that no action had been taken yet (n=5, 7.1%; Table 2). Reasons provided for not having taken any action included inconsistent or lack of staff oversight, resistance from students, and others not being receptive to guidance from food service staff. Among the districts indicating the presence of school stores, 89.1% (n=57) reported that someone was responsible for ensuring foods sold in school stores or snack carts in secondary schools met Smart Snack standards.

Strengths and Limitations

Limitations of this study include use of an unvalidated survey, although it was reviewed by several individuals with experience working in school nutrition programs. Another limitation is the study's reliance on self-reporting of compliance with Smart Snacks. It is possible that compliance levels were over-estimated due to social desirability bias and endorsement by the

state oversight agency. This survey was limited to SFAs in one Midwestern state and, consequently, findings may have limited generalizability to other regions of the country. Strengths of this study include a reasonably high survey response rate (55%) and large sample size (n=247). The survey included both closed-ended and open-ended questions to gather in-depth information from participants. The results of this study fill the need for analysis of the implementation of Smart Snacks regulations in secondary schools, and add the perceptions of those working at a local level to the literature.

CONCLUSIONS AND APPLICATION

The results of this study describe competitive food sales in Minnesota public secondary schools, and identify the successes and challenges of implementing USDA's Smart Snack regulations since they took effect in 2014 from the perspective of the SFA. This information may help inform future support for SFAs so that successful implementation of Smart Snack regulations can occur.

Results of this survey indicated SFAs viewed that, generally, there had been successful implementation of the Smart Snack regulations in their districts in relation to a la carte and vending machine food sales. Similar to findings from other studies (Gorski et al, 2016; Orava et al., 2016), implementation of Smart Snack regulations in other venues, particularly fundraisers and school stores/snack carts, was perceived as more challenging and less successful. This finding is consistent with other studies that have found uneven compliance with competitive food and beverage policies across school levels and between categories (Gorski et al., 2016, Orava et al., 2016). The greater success of implementation for a la carte sales and vending machines compared to fundraisers and school stores/snack carts may be related to these types of food sales being under the direct control and supervision of the school food service director and nutrition department. For example, the NOURISH study found an increase in foods meeting state nutrient standards after implementation, and noted that this success may be related to outside vendors or school organizations running few vending machines and school stores (Hoffman et al., 2015). Additionally, identifying a specific person within the district who is responsible for ensuring compliance and creating procedures for compliant food sales, particularly regarding fundraisers, may be a best practice for implementation of the Smart Snack regulations.

Results of this study indicated a variety of actions were used when implementing the Smart Snack regulations, including removal of all types of competitive food sales. Furthermore, many participants reported limiting sales of non-compliant items to non-school hours or removing these items from sales, therefore potentially reducing revenue. Previous studies have reported decreased numbers of food items offered after implementation of state-level competitive food standards (Hoffman et al., 2015; Whatley et al., 2007). Whatley et al. (2007) studied the implementation of low-fat, low-sugar guidelines in Maine high schools and found that the percent of compliant items increased after implementation, but the overall number of items offered, and number of vending machines decreased (Whatley et al., 2007). Similarly, the NOURISH study found decreased product availability after implementation of state competitive food and beverage policies, but noted a wide variety of products was still for sale (Hoffman et al., 2015).

Discontinuing and reducing food sales in response to the Smart Snack regulations raises concern for the consequence of reduced profits for school meals programs that rely on income outside of their reimbursable meal programs. Historically, a la carte lines have increased profits for nutrition programs because students like the options available (Kramer-Atwood et al., 2002). For

example, SNDA-II found that a la carte lines generated $1,985 per 1,000 high school students each week (Kramer-Atwood et al., 2002). More recently in SNDA-III, food service management units reported earning 12% of revenue from competitive foods (USDA, 2019). Protecting needed profits for districts is an important consideration when implementing the Smart Snack regulations. Additional effort and support may be required for SFAs to avoid reducing sales or assist with rebuilding food sales while still complying with the regulations.

Some of the success of the implementation of Smart Snack regulations related to a la carte food sales may also be attributed to the use of look-alike snacks such as cookies, chips, or other packaged snack foods. While the look-alike substitution foods sold in these types of sales meet nutrient standards (e.g., cookie that meets standards replaces a cookie that does not), these types of changes may have little impact on students' abilities to make healthy choices outside of the school setting. Harris, Hyary, and Schwartz (2016) found that students and parents are often confused about the nutritional quality of various versions of snack foods as many look-alike products offered in schools are indistinguishable from less nutritious products sold in stores. These researchers suggested that serving these look-alike foods may mitigate the impact of Smart Snack regulations to inform healthy eating habits and long-term health (Harris et al., 2016). Meanwhile, many respondents reported being able to expand a la carte food sales with food items prepared from scratch using recipes. This strategy is important to share as it may assist other SFAs in growing their a la carte food sales while maintaining compliance with Smart Snack regulations without relying on look-alike food products.

Survey respondents identified facing several barriers to successful implementation of the Smart Snack regulations. These issues included difficulty in the education of other school staff and administration on these regulations, or facing resistance from other staff and students. Previous studies have also found varied levels of support by administrators, faculty, and food service staff in implementing competitive food policies (Whatley et al., 2007). Findings from this study suggest there is a need for education and training about Smart Snack regulations targeted at non-food service staff and administration and support for food service staff to work with other staff on these efforts. Asada et al. (2016) identified strategies to help food service directors gain support for implementing the Smart Snack regulations, including referencing the actual written policy as a powerful persuasion tool to take action and framing communications regarding Smart Snacks in a positive light, such as teaching kids healthy eating habits.

Effective implementation of Smart Snack regulations by SFAs requires support and effort throughout the district including training and education, designating specific authorities, and creating procedures to ensure compliance. The strategies and solutions described in this study can be used to create training and education materials regarding the Smart Snack regulations to assist SFAs in full implementation. Implementing Smart Snack regulations related to fundraisers seems to take additional effort for food service directors, as many reported utilizing procedures that required them to assess fundraisers on a case-by-case basis. Rosenfeld et al. (2017) also identified making a clear decision about fundraisers as a best practice of more compliant districts. Developing clear procedures for ensuring compliance and designating a specific person for ensuring that compliance may be important steps for SFAs to take to successfully implement the Smart Snack regulations, especially in regard to food-based fundraisers. For example, these procedures could be incorporated into the required Local Wellness Policy.

Finally, many participants reported relying on food distributors and product manufacturers for information about the Smart Snack regulations. Rosenfeld et al. (2017) also found that in 2013 and 2014, 65.4 and 71.4% of food service directors in more compliant districts communicated

with vendors more because of the new standards, and the authors identified this communication as a best practice. The Smart Snack regulations provided a national standard that food manufacturers and vendors are now able to use in product development and sales. Vendors and manufacturers can be strong partners to help impact the success of implementation of Smart Snack regulations.

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