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HEALTHY VENDING POLICY INCREASES SALES AND HEALTHY FOOD CHOICE

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Background: Vending machines can be a source of unhealthy food and beverages, potentially contributing to obesity and obesity-related diseases. However, vending machines are often a source of revenue for schools and hospitals. As such, interventions that improve the healthfulness of the snacks and beverages purchased may be a more acceptable solution than simply banning them from host institutions. **Methods:** The purpose of this project was to evaluate the impact of a healthy vending policy to improve the quality of snacks and beverages purchased from vending machines. During the pilot, the usual snacks contained in the vending machines at a hospital and a university were adjusted so that 65% of products in the selected vending machines met the National Alliance for Nutrition and Activity (NANA) Model Beverage and Food Vending Machine Standards. Sales data was compared and interviews were conducted to evaluate the impact of the healthy vending policy. **Results:** Overall, sales increased by an average of \$70.71 at both sites after implementing a healthy vending policy. A total of 25 interviews were conducted with individuals making vending purchases. Forty-eight percent chose a vending item that met the NANA guidelines and 27% of those who did not select healthier snacks said they would consider choosing the product if there was a price discount. Primary reasons for purchase choice were taste, health and product familiarity. **Discussion:** The results of this healthy vending policy pilot demonstrate that increased availability of healthy snacks led to increased sales. Incorporating healthy vending guidelines is a public health win; the foodservice contractors stand to maintain or increase sales while consumers have access to snack options to improve health.

Background | Research has identified vending machines as a source of unhealthy food and beverages. Bryd-Bredbenner and colleagues describe characteristics of more than 2,600 snack machine slots in vending machines on college campuses, noting that most snack portions are nutrient-sparse, high in sugar and fat, low in fiber, and average >200 kcal/serving.¹ Over-consumption of these discretionary choices increases the risk of developing chronic disease such as cardiovascular disease, hypertension, diabetes, some cancers and obesity.² Over the past decade or more, there has been interest in determining the feasibility and sustainability of healthier changes to vending.

Vending machines are important sources of revenue for hospitals and universities. In 2016, an estimated \$21.6 billion in beverages and snacks were sold in vending machines throughout the United States.³ While illustrating the volume of discretionary foods and beverages that are made available by vending machines, it also highlights the profits made. As a result, reduced profitability is frequently cited as a

barrier to removing or improving the nutritional value of snacks and beverages sold in vending machines.⁴ Consequently, interventions that improve the healthfulness of the snacks and beverages purchased may be a more acceptable solution than simply banning them from host institutions.

With their content modified, vending machines can contribute to making the healthy choice the easy choice.⁵ There is a growing body of evidence that suggests that point-of-purchase nutrition information is able to assist in informing consumer choices by improving consumer awareness and understanding nutritional value of foods. For example, adding promotional signs encouraging the purchase of healthier snacks from vending machines resulted in increased consumer purchasing and revenue among individuals on a university campus.⁶

Recently, there have been efforts to regulate snacks and beverages offered in vending machines via policy action. The food environment has been identified as an important agent in the choices people make, and

settings such as schools and workplaces have been identified as important targets of environmental interventions as they can assist or hinder individuals in making healthy choices.⁷ As such, the World Health Organization (WHO) and the International Task Force Against Obesity have called for changes at societal level, with efforts to ensure that healthier food choices are available and affordable for all.⁸ A number of public policies have been enacted in an attempt to reduce the negative impact that vending machine contents can have on health. For example, federal legislation mandates that calories must be displayed in a way in vending machines so that customers can read the label to assist consumers in making healthier choices.⁹

Public health efforts are indicated to improve the nutritional quality of vended food and beverages. The purpose of this project was to evaluate the impact of

implementing a policy to improve the quality of snacks and beverages purchased from vending machines.

Methods | The project was conducted at two sites: Brooks Rehabilitation Hospital and Nova Southeastern University. During a 2-month pilot, the usual snacks contained in the vending machines at the sites were adjusted so that 65% of products in the selected vending machines met the National Alliance for Nutrition and Activity (NANA) Model Beverage and Food Vending Machine Standards.¹⁰ The guidelines, which were included in healthy vending policy, were applied to all the vending machines in the Brooks Health Care Plaza, representing a total of 2 machines. The policy guidelines were applied to all the vending machines in the Health Sciences buildings at Nova Southeastern University, a total of 6 machines.

Table 1. Healthy Vending Standards

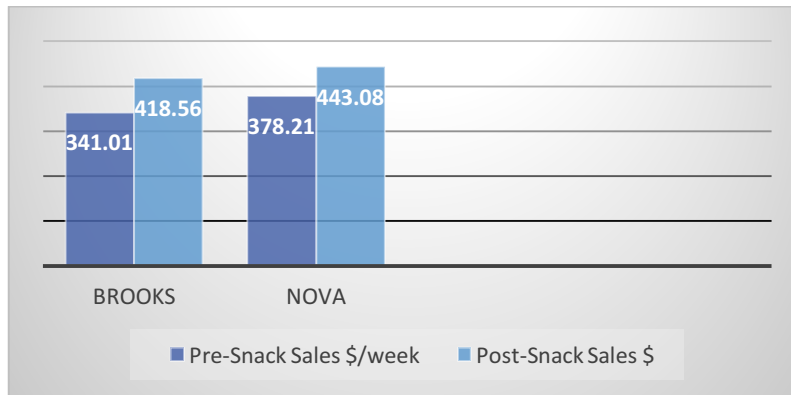
NANA guidelines ¹⁰
Contain 200 or fewer calories per package
Have no more than 35 percent of calories from fat
Have no more than 10 percent of calories from saturated fat, except for snacks containing 100 percent nuts or seeds with no added fats or sugars
Contain 10 grams or fewer of sugar per package
Have no more than 35 percent of calories from sugar, except for fruit, vegetables, and yogurt, which may contain up to 30 grams per 8 ounces

In addition to implementing the healthy vending policy to provide increased access to healthier snack options, point-of-purchase nutrition labeling was added to the vending machines to educate consumers as they were making choices and promote the healthy products. Prices for snacks were not changed for the pilot. Most snacks that met guidelines were similarly priced as the snacks not meeting the guidelines; however, some snacks that met guidelines, such as trail mix, are priced higher than the average snack.

A mixed methodology was utilized to evaluate the impact of the healthy food policy. Sales data from vending machines prior to incorporating the healthy food items was compared to sales after incorporating the healthy food items. Interviews were conducted with individuals making vending purchases. Snack choices were observed. Convenience sampling was used to select subjects. Interviewees were asked reasons for their purchase choice, if they noticed the point-of-purchase signage, what they thought the

signage meant, and if it made a difference in their purchase choice.

Results | Vending sales data was gathered for the study period. Brooks Rehabilitation Hospital implemented the healthy vending policy in vending for 3 months while Nova Southeastern implemented the healthy vending policy in vending for 2 months. Sales represent pre- and post-sales for those vending machines altered to comply with the policy guidelines. Because each site had differing intervention times, results are broken down by site and by sales/week. Overall, there were increased sales seen at both sites after the implementation of the healthy snacks. Brooks Rehabilitation Hospital experienced an increase in snack sales by \$77.55/week or \$930.60 increase in snack sales for the total 90- day study period. Nova Southeastern University experienced an increase in snack sales of \$63.85/week or \$778.20 for the total 60- day study period.

Figure 1. Vending Sales

A total of 25 interviews were conducted with individuals making vending purchases. Interviewees were all adults, with 13 being college students (average age being 20.9 years old) and 12 being hospital visitors (average age being 54.1 years old). There was an equal mix of gender. Race and ethnicity was not recorded. Forty-eight percent chose a vending item that met the NANA guidelines. When asked the main reason for their purchase choice, 48% said taste, 28% said healthy choice, 12% said the product was familiar, and 12% provided other reasons. Forty percent noticed the point-of-purchase label and 84% recognized the label meant it was a healthy choice. Forty percent of the respondents said the point-of-purchase label made an impact on their vending choice. Of the respondents who did not choose a food that met the NANA guidelines, 27% said they would consider choosing the product if there was a price discount.

Discussion | This study supports the positive impact of a healthy vending policy on sales and food choices. One of the barriers to incorporating healthy food choices into vending is the perception that sales will decrease. The results of this multi-site study, however, found that implementation of a healthy food policy in fact increased sales. Between the 2 sites, sales increased on average by \$70.70/week. Although the increase may not be viewed as financially significant, the result demonstrates that increased availability of healthy snacks led to increased sales rather than a loss in sales as commonly believed. As such, incorporating the healthy vending guidelines permanently is a win-win for all; the foodservice contractors stand to maintain or increase sales while consumers have access to snack options to improve health.

Access to healthy food choices does not always translate into selection. An innovation of this project was the incorporation of point-of-purchase labeling. The labeling emphasized recognition of the healthy food choices and the importance to health. Based on interview themes, the point-of-purchase labeling was recognizable and promoted consumers to make healthy choices. Taste was cited as the most important factor affecting food choices followed by healthfulness. The increased availability allowed consumers to try the healthier snacks and learn that they liked the taste of the snacks which can promote repeated selection in the future. One strategy illuminated in the interviews that may further promote selection of healthier snacks is to decrease their price initially to incentivize selection.

There were several challenges and limitations to the implementation of the healthy vending policy. The vending contractors were resistant to implementing the policy because of the worry they would lose sales. In fact, a third implementation site that initially agreed to participate in the pilot later declined because of they feared loss of revenue. The results of this pilot are very important to address this misconception. A second challenge was variety of snacks. The vending contractor had limited options that met the NANA guidelines which limited the variety of snacks significantly. Despite this, sales still increased. Again, the results of this pilot can be used to encourage vending contractors to increase their variety of healthier snack options. A final challenge was a malfunctioning vending machine. One of two vending machines stopped giving change which could have made an impact on sales of the healthier snack options. One limitation of the study was the short study period. It is anticipated that we saw the biggest changes in the first months and that continuing the study for a longer

period may result in a plateau or even a decline in sales. A second limitation was the limited number of sites and machines in the study. Though the study was at diverse sites, more sites and more vending machines within each site would have helped increase the generalizability of the study. Another limitation of the study is that information on race and ethnicity was not obtained which could decrease generalizability of the results.

Implications for Public Health Practice | The important role of food and nutrition in public health is being increasingly recognized as crucial for its potential impact on health-related quality of life and economics, both at the societal and individual levels. The question then is what is the health savings of an intervention such as this healthy vending pilot. For this pilot, the healthier snack options contained ≤ 200 calories, ≤ 230 milligrams of sodium, ≤ 10 grams of sugar, $\leq 10\%$

saturated fat and no trans fats. Choosing these healthier snacks over their traditional counterparts can potentially save 60-100 calories, 8 grams of fat, 35-125 milligrams of sodium, and 15 grams of sugar in one serving. Dall et al¹¹ estimated that permanent 100-kcal reductions in daily intake among the overweight/obese would eliminate approximately 71.2 million cases of overweight/obesity. In the long term, this could increase national productivity by \$45.7 billion annually. Long-term sodium reductions of 400 mg in those with uncontrolled hypertension would eliminate about 1.5 million cases, potentially increasing productivity by \$2.5 billion annually. Though we cannot calculate the exact health savings of this pilot, it can be said that a large-scale implementation of the healthy vending policy has the potential to significantly improve health and decrease health costs.

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