

Revamping a Vegetarian, Seventh-Day Adventist School Lunch Program

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Abstract

In an effort to improve the nutrition of the vegetarian lunch menu at Vista Ridge Academy, a private Seventh-Day Adventist school in Colorado, the old menu was given an overhaul. The new recipes chosen were incorporated into meals that offered a higher standard of nutrient density than those set by the National School Lunch Program (NSLP) and also integrated nutrition standards from various Dietary Reference Intakes (DRIs) set by the American Dietetic Association. Additionally, the new menu incorporated more fresh vegetables, fruits and whole grains but contained less sodium and fat. The resulting menu was more balanced while still maintaining affordability and including foods which were seasonally available. While many aspects of nutrition were improved in the process, there are still many hurdles and challenges with the program. If these can be overcome, the school lunch program at Vista Ridge Academy is sure to be a success as it gets refined for future years. The results from this project have implications in any school system looking to improve their vegetarian offerings or incorporating meatless meals into the school week.

Introduction

The National School Lunch program (NSLP) is a federally funded meal program that establishes nutritional guidelines for school meals and provides assistance to certain educational institutions. The program began in 1946 under the National School Lunch Act and has been highly successful in offering meals to all students from participating schools, including those who are on limited incomes (USDA, 2010).

While nutritional guidelines exist under the NSLP, there are no recommendations or procedures regarding which specific foods are served or how meals are prepared at the school. The NSLP dietary guidelines state that school lunches must meet the following parameters:

- One-third the Recommended Dietary Allowances (RDA) for calories
- Approximately 30% of total meal calories from fat
- Less than 10% from saturated fat
- One-third the RDA for protein, vitamin A, vitamin C, iron, and calcium

The NSLP has seen much success since its implementation and has coupled with other programs like the School Milk Program or the National School Breakfast Program. However, obesity continues to rise in America, becoming more prevalent in younger children in past years (USDA, 2010). Despite efforts to educate, soda consumption remains high, physical fitness levels are low, and funding for after school wellness programs continues to be cut. To top this off, the NSLP does not provide funding adjustments for yearly changes in food prices, include any fresh fruits, vegetables or whole grains, and does not prevent the overconsumption of harmful nutrients like sodium. The Child Nutrition Act was due for a rewrite in 2010 and high expectations to improve nutrition for a generation of school children who have become obese have been ignored. On December 13, 2010 President Obama signed S3307, the Healthy, Hunger-Free Kids Act into law which renewed not only the Child Nutrition Act but various other nutrition-oriented programs (School Nutrition Association, 2011).

Another drawback to the NSLP is that it does not provide guidelines or resources for alternate school meals, like vegetarian and ethnic foods, as part of its program. Recent surveys show that about 3% of children under age 18 consider themselves vegetarians, about the same percentage as adults (3.4%, Stahler, 2009). This number is climbing among older adults and children alike. Throughout their lifetimes, people become vegetarian for many reasons including health, cultural, religious, and personal beliefs. Sometimes vegetarianism starts early in life with children as young as 3 years old identifying themselves as a vegetarian (Stahler, 2010). In addition, many schools experiment with vegetarian entrees, but some school districts simply cannot afford to have them on the menu. They are not reimbursed by the NSLP and some of the alternate items cost more than their meat counterparts.

One of the more prominent Christian religions in the United States with ties to nutrition is the Seventh-Day Adventist (SDA) group. The Adventist health system is one of the largest health-care delivery systems in the nonprofit sector and the church operates more than 570 facilities (AHI, 2010). In addition, the SDA supports many primary schools and universities found throughout the country. The lifestyle of this religion encourages vegetarianism as one of its fundamental beliefs stating:

“...our bodies are the temples of the Holy Spirit, we are to care for them intelligently. Along with adequate exercise and rest, we are to adopt the most healthful diet possible and abstain from the unclean foods identified in the Scriptures. Since alcoholic beverages, tobacco, and the irresponsible use of drugs and narcotics are harmful to our bodies, we are to abstain from them as well. Instead, we are to engage in whatever brings our thoughts and bodies into the discipline of Christ, who desires our wholesomeness, joy, and goodness. (CIRCLE, 2010)”

However, having nutrition goals at the foundation of a religion or culture does not guarantee that foods provided are nutritionally rich. Junk food can commonly be a part of any person’s diet, even vegetarians. The goal of this project was to rewrite a private school lunch menu for a vegetarian-only SDA facility in accordance with the school’s mission statement and core values while directly competing with the public school nutrition programs.

Location and Facility

Vista Ridge Academy is located in Erie, Colorado, a small town approximately 15 miles east of Boulder. This private school provides a Christian-based education and learning environment for kindergarten through twelfth grade students. Based on Seventh-Day Adventist values, one of the goals of the school is to teach students to “learn to live a healthy and balanced lifestyle in activity, dress, eating habits and temperance” (Vista Ridge web site). In accordance with the Seventh-Day Adventist values, the Vista Ridge Academy cafeteria serves only vegetarian meals.

The foodservice program at Vista Ridge Academy is self-funded, meaning sales of school lunches are funneled back into the program for subsequent meal preparation and ingredients. There is no formal foodservice director and/or registered dietitian in charge of the program. Currently, Cindy Morgan, Development Director/Volunteer, is overseeing daily operations and providing support for the kitchen staff. The school does not participate in the NSLP due to its status as a private, for-profit school.

The cafeteria is staffed by volunteers, mostly parents of students at the school, who are trained in how to prepare and serve the recipes. On Mondays, pizza is cooked off and served from the cafeteria, but is brought in by an outside company. Hot lunch meals are served from the cafeteria Tuesday, Wednesday and Thursday throughout the school year. Friday lunches are brown bag lunches that the students bring from home. There are no vending

machines in the school, but there are fundraising programs that occur during lunch periods which offer variable types of snack food options. There are no deep-fat fryers either. Hot food is prepared on the stovetop or in the oven.

NSLP Guidelines

Approximately 83% of all public and private schools participate in the NSLP (Gordon et al, 1995). On a typical day at Vista Ridge, 75 student meals are served, or about 50% of the student population participates in the school’s lunch program. In schools who participate, NSLP lunches provide one-third or more of the recommend dietary allowances (RDAs) for key nutrients (Tables 1 & 2; USDA, 2010). However, Vista Ridge Academy is a privately run school and is not a participant of the NSLP. They are under no specific guidelines or standards of nutrition for their meals.

To create a goal for meal creation during the menu revision process, both the NSLP and the RDA guidelines were used to create nutritional standards for this project (see Tables 1 & 2).

Table 1: Macronutrients

	Calories (kcal)	Total Fat (g)	Saturated Fat (g)	Protein (g)	Fiber (g)
NSLP*	----	<30% total calories	<10% of calories	----	----
4-8 year olds[†]	1400-1600	39-62 (25-35%)	16-18 (<10%)	19	19-23
9-13 year olds[†]	1600-2000 f 1800-2200 m	62-85 (25-35%)	18-22 f 20-24 m (<10%)	34	23-28 f 25-31 m
13-18 year olds[†]	1800-2000 f 2200-2400 m	55-78 f 61-95 m (25-35%)	22-24 f 24-27 m (<10%)	46 f 52 m	23-28 f 31-34 m
<p>* Guidelines created using the NSLP “over an average week” - Also includes recommendations for variety, including whole grains, keeping added sugars low, and overall salt content to a minimum</p> <p>[†] Guidelines created using average RDAs for age group</p>					

Table 2: Micronutrients

	Iron (mg)	Calcium (mg)	Vitamin C (mg)	Vitamin A (IU)	Sodium (mg)
NSLP*	33%	33%	33%	33%	----
4-8 year olds[†]	10	800	25	1333	1200-1900
9-13 year olds[†]	8	1300	45	2000	1500-2200
13-18 year olds[†]	15 f 11 m	1300	65 f 75 m	2333 f 3000 m	1500-2300

*Guidelines created using the NSLP
"over an average week" - Also includes recommendations for variety, including whole grains, keeping added sugars low, and overall salt content to a minimum

[†]Guidelines created using average RDAs for age group

School Lunch Program Prior to Revision

The majority of parents and teachers interviewed (prior to rewriting the menu) felt that a private school should absolutely exceed nutritional requirements of food programs already in place at public schools. Selected parents interviewed for this article felt that because they were paying more for their child to attend a private school, they expected all aspects of education (including foodservice) to be at higher standards than public school counterparts.

The cost for meals prior to revision was \$3.00 for a regular portion and \$3.50 for a "large" portion. The meal included only a main entrée (no beverages or any additional side items were included). The menu was a yearly cycle running from September through June with a 4-week rotation of items (about 13 different recipes were in use for the prior school year 2009-2010).

Although the NSLP does not provide guidelines for sodium, total calories, or fiber content of school meals; this is an important factor when designing a menu plan for children and adolescents (see Tables 1 & 2 for guidelines used). Guidelines for these nutrients were chosen based on average recommendations for the age group.

Table 3 summarizes the nutritional information for the original recipes used at Vista Ridge Academy. Of the 13 entrees analyzed, none met the guidelines of the NSLP. Table 3 shows the goal values for each nutrient per meal along with the number of recipes that fell outside those guidelines. The percentage of recipes falling outside the guidelines is also given.

Table 3: Original Recipes: Nutrition Analysis (n=13)

Nutrient	Overall Goal per meal	Number of Recipes Meeting Guidelines (±5%)	Percent of Recipes Meeting Guidelines (±5%)
Calories [†]	700 calories	5	39%
Total fat [*]	<30% total calories	4	31%
Saturated fat [*]	<10% total calories	8	62%
Protein [†]	15 g	11	85%
Iron [*]	4 g	4	31%
Calcium [*]	400 mg	4	31%
Vitamin C [*]	10 mg	6	46%
Vitamin A [*]	700 IU	9	70%
Sodium [†]	700 mg	1	8%
Fiber [†]	5 g	12	92%
[*] Guidelines created using the NSLP [†] Guidelines created using average RDAs for age group <i>∞None of the nutrition analyses include the addition of fluid milk or beverages to the meal.</i>			

The most popular meals according to sales were those that were high in calories, sodium and overall fat content. The amount of calories in each of the recipes analyzed varied from 350 to 960 (average entrée = 642 calories). While energy recommendations vary based on gender and age group, an average of 700 calories per meal period was chosen as the standard meal goal.

The amount of sodium offered in the original Vista Ridge Academy original menu also exceeded recommendations on nearly every entrée. The average amount of sodium in the lunches was an astonishing 1425 mg, nearly twice as much as the target of 700 mg and half the daily recommendations for these age groups.

Shockingly, the amount of saturated fat in the recipes was higher than recommendations with an average of 9 g per meal (approximately 33% of calories).

Levels of cholesterol (not noted on the tables) and fiber content were the closest to meeting recommendations, but this was not unexpected due to the vegetarian principles underlying the foodservice program.

After Revision of the Menu to meet NSLP Guidelines

After the menu revision, the price for meals was \$3.50 for grades K-4th and \$4.00 for grades 5th -12th. Extra portions are usually free depending on availability, but are occasionally sold at \$0.50 per serving (only for the higher priced meals that contain soy meats).

Since Vista Ridge Academy has a variety of ages, designing a menu that satisfied all the nutritional components for all age groups was very challenging. Some “old favorites” were kept but recipes were modified to be more nutritional adequate for the age groups. For example, macaroni & cheese was no longer made from boxed, commercially available products, but was made from scratch using a blend of whole wheat and white pasta along with low fat cheeses. The hot dog meal was modified to include a whole wheat bun along with fruit and vegetables side dishes instead of potato chips.

Fluid milk is an important component in an adequate diet, being one of the most important sources of calcium, and contributing substantially to the protein and vitamin A content of a meal. It is an important part of the traditional school lunch programs. In the 1965 survey on dietary levels of U.S. households, it was found that calcium and iron intakes were substantially below the recommended amounts in one-fifth of all households (Gunderson, 2010). This was due principally to the low consumption of milk and milk products, vegetables, and fruits. Federal assistance in providing milk for school children has been in operation since June 4, 1940 (Gunderson, 2010). While the original menu did not provide any type of beverage, at the time of publication 2% milk or water were being offered to students. A plan to incorporate a 100% fruit juice option is being considered.

In addition to changing the meals and recipes to better fit nutritional guidelines, a menu cycle was also put into place. This cycle has a four-week menu which rotates every three months. This allows the school to shop for more in-season produce and include variety throughout the school year.

Summary of changes that were made to all meals:

- Four-week recipe cycle with three month rotations (see cycle menus)
- Fruit and vegetable choices fluctuate based on what is in season
- One carton (~8 oz) of low fat, nonflavored milk or soy milk
- One serving of seasonal fresh fruit
- Side dishes revamped to include: cornbread, roasted potato fries, air popped popcorn, baked tortilla chips, baked hash browns, side salads, or veggie sticks
- Vegetable servings were added by either incorporating into the entrée, offered as a salad, or fresh carrot and celery sticks with dip
- Salad bar available for high school students (in process of purchasing)
- Alternate menu option available for students not liking main entrée (usually a sandwich option)
- Air popped popcorn is served instead of potato chips
- Whole grain bread is used instead of white bread
- Vegan options

Twenty-eight new recipes were created for Vista Ridge including both entrees and side dishes. In addition, 8 original recipes (some of the student's favorite recipes) were revamped to better meet the nutritional goals created for this project. Table 4 shows the nutritional goals being met by the new recipes. All of the old recipes were modified to meet these guidelines as well.

Table 4: New Recipes: Nutrition Analysis (n=12)

Nutrient	Overall Goal per meal	Number of Recipes Meeting Guidelines ($\pm 5\%$)	Percent of Recipes Meeting Guidelines ($\pm 5\%$)
Calories [†]	700 calories	11	92%
Total fat [*]	<30% total calories	10	84%
Saturated fat [*]	<10% total calories	9	75%
Protein [†]	15 g	11	92%
Iron [*]	4 g	5	42%
Calcium [*]	400 mg	8	67%
Vitamin C [*]	10 mg	12	100%
Vitamin A [*]	700 IU	12	100%
Sodium [†]	700 mg	9	75%
Fiber [†]	5 g	12	100%
[*] Guidelines created using the NSLP [†] Guidelines created using average RDAs for age group <i>∞None of the nutrition analyses include the addition of fluid milk or beverages to the meal.</i>			

On average, each entrée from the new menu provides approximately 500 calories, (varied from 350 to 660 calories). The weakest point in the new menu was amount of calcium (only 67% of new menu items met the goal of 400 mg) and iron (only 42% of the new menu items met the goal of 4 mg). However, with the addition of fluid milk to the menu, these deficits were remedied.

Parents at Vista Ridge were very supportive of the changes made to the lunch program, even though it meant an increase in pricing. Parents expressed concern over size of portions since they had "growing boys who needed to eat more." Vista Ridge already had offered a \$0.50 charge for a full additional meal (not just a portion of the meal's entrée) for students who wanted more food. Some parents said they would be okay with adding a cookie to meals as well. However, different fundraisers throughout the school year provide an opportunity for the students to buy sweets such as cookies and candy during their lunch breaks.

Discussion

Overall, the changes to the school lunch program were well-received by both parents and students. The nutrition information for the lunch entrees after the menu was rewritten met all of the target guidelines we set for ourselves. Implementation of this program at Vista Ridge is not without its challenges. Training and implementation of the menu revisions remains an issue due to the size of this school, funding of the foodservice program, and lack of a foodservice director to oversee operations and food purchasing. Food vendors have not been established to regularly deliver food and groceries to the school as this would help with keeping recipes executed consistently. In addition, training of foodservice staff to deal with shortages of food, making healthy substitutions on the fly, and dealing with supply issues is needed.

While Vista Ridge Academy has unique needs as a vegetarian only cafeteria, the results of this study may help other school systems incorporate vegetarian options into their school lunch programs. Lifelong eating patterns are established in childhood. Thus, getting nutritionally-rich meals and vegetarian options into schools will do more than satisfy the

critical goal of providing food to students. It will help to create an understanding that will affect student's dietary choices throughout their lifetime.

Having a vegetarian lunch program does not necessarily guarantee a lower rate of obesity in the population it services. Children can bring in their own meals and chose not to participate in the school lunch programs at their respective schools. Including veggie alternatives at lunchtime affirms that vegetarian meals are healthy, bona fide and desirable.

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