



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

University of Wollongong  
Research Online

---

Faculty of Education - Papers (Archive)

Faculty of Social Sciences

---

2011

# Nutritional policies and standards for snacks served in after-school programmes: a review

Michael W. Beets

*University of South Carolina - Columbia, beets@mailbox.sc.edu*

Falon Tilley

*University of South Carolina - Columbia*

YoungWon Kim

*University of South Carolina - Columbia*

Collin Webster

*University of Wollongong, cwebster@uow.edu.au*

---

## Publication Details

Beets, M. W., Tilley, F., Kim, Y. & Webster, C. (2011). Nutritional policies and standards for snacks served in after-school programmes: a review. *Public Health Nutrition*, 14 (10), 1882-1890.

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library:  
research-pubs@uow.edu.au

## Public Health Nutrition

<http://journals.cambridge.org/PHN>

Additional services for **Public Health Nutrition**:

Email alerts: [Click here](#)

Subscriptions: [Click here](#)

Commercial reprints: [Click here](#)

Terms of use : [Click here](#)



---

## Nutritional policies and standards for snacks served in after-school programmes: a review

Michael W Beets, Falon Tilley, YoungWon Kim and Collin Webster

Public Health Nutrition / Volume 14 / Issue 10 / October 2011, pp 1882 - 1890  
DOI: 10.1017/S1368980011001145, Published online: 01 June 2011

**Link to this article:** [http://journals.cambridge.org/abstract\\_S1368980011001145](http://journals.cambridge.org/abstract_S1368980011001145)

### How to cite this article:

Michael W Beets, Falon Tilley, YoungWon Kim and Collin Webster (2011). Nutritional policies and standards for snacks served in after-school programmes: a review. Public Health Nutrition, 14, pp 1882-1890 doi:10.1017/S1368980011001145

**Request Permissions :** [Click here](#)

## Short communication

# Nutritional policies and standards for snacks served in after-school programmes: a review

Michael W Beets<sup>1,\*</sup>, Falon Tilley<sup>1</sup>, YoungWon Kim<sup>1</sup> and Collin Webster<sup>2</sup>

<sup>1</sup>Department of Exercise Science, Arnold School of Public Health, University of South Carolina, 921 Assembly Street – RM 131, Columbia, SC 29208, USA: <sup>2</sup>Department of Physical Education, University of South Carolina, Columbia, SC, USA

Submitted 3 January 2011; Accepted 1 April 2011; First published online 1 June 2011

### Abstract

*Objective:* To review and synthesize existing national and state organizations' policies related to the nutritional quality of snacks served in after-school programmes (ASP; 15.00–18.00 hours) in the USA.

*Design:* Systematic review of websites and corresponding documentation describing national and state-level ASP organizations' policies, standards, guidelines and/or recommendations for the nutritional quality of snacks served within the ASP setting.

*Setting:* ASP can play a critical role in a child's daily dietary intake. State and national organizations have developed policies to assist ASP in selecting nutritionally appropriate snacks, yet no widely accepted standards exist. By reviewing the extent of existing policies, recommendations for uniform policies can be made.

*Subjects:* Policy documentation.

*Results:* A total of seventeen organizations representing five unique snack policies comprised of thirteen different food items were identified. The most widely recognized snack policy, which the majority of state and national ASP organizations endorsed and upon which other snack policies were modelled, was the US Department of Agriculture reimbursement programmes. Consistently, policies endorsed serving fruits/vegetables, whole grains and milk/dairy products, and limiting foods high in fats/sugar/energy (calories). Two policies focused predominantly on total energy and macronutrient composition of snacks, a single policy suggested limits on sugar-sweetened beverages, and three endorsed serving water daily. A proposed set of general guidelines for ASP was developed based on uniformity in recommendations across policies.

*Conclusions:* The proposed set of nutritional guidelines will assist policy makers and ASP providers in selecting and serving nutritionally appropriate snacks that contribute to a child's overall healthful daily dietary intake.

**Keywords**  
Children  
Policy  
School  
Community

Across the USA, after-school programmes (ASP; 15.00–18.00 hours) serve over 8.4 million youth an average of 8.1 h/week, with the majority of youth attending being of elementary-school age (5–12 years) and from low-income schools<sup>(1)</sup>. ASP are those that provide adult supervision for students immediately after school and incorporate snacks, homework help, recreational activities and cultural enrichment activities. Programmes can be offered either by a school or by a community partner (e.g. YMCA, Boys and Girls Club). ASP that focus solely on a single activity (e.g. music lessons, Pilates)<sup>(2)</sup> or are designed specifically to promote physical activity such as clubs (e.g. Girls on the Run) or sports teams (e.g. intra- and

inter-murals)<sup>(3–6)</sup> are not considered within this definition. The snacks provided during an ASP represent an important time in a child's daily nutrient intake – between lunch at school and before dinner at home<sup>(7)</sup>. Dietary studies suggest snacks can contribute up to a quarter of a child's total daily energy intake<sup>(8)</sup>. Hence, snacks play a critical role in the dietary intake of children.

Almost half of the daily energy intake of children and adolescents in the USA is characterized by the consumption of empty-calorie foods<sup>(9)</sup>. Information regarding the nutritional quality of snacks served in ASP, albeit limited, suggests snacks served in this setting contribute to this pattern. On average, ASP snacks contain more than

\*Corresponding author: Email beets@mailbox.sc.edu

the recommended total energy (calories) for snacks<sup>(10,11)</sup>. Snacks served are typically characterized as low in nutrient density, with over three-quarters of the snacks served in ASP containing added sugars (e.g. cookies, cereal bars, granola bars) or categorized as salty snacks (e.g. chips, pretzels, snack mixes)<sup>(10)</sup>. Conversely, fruits and vegetables are served infrequently, with fruits offered as a snack option less than 1 serving/d<sup>(10–12)</sup> and vegetables almost entirely absent from snack menus<sup>(10,11)</sup>.

To address these unhealthy trends, state- and national-level organizations have developed policies and/or standards designed to improve the nutritional quality of the snacks served in ASP. However, the success of policies in galvanizing desired changes appears to have fallen short<sup>(10–12)</sup>. A possible reason for the apparent low impact of current policies is that they may lack cohesion or the common direction needed to help organizations set clear and achievable goals. Without widely recognized, adopted and implemented policies, ASP may depend too heavily on localized understandings of best practices or simply serve snacks that 'fit' within budgetary restraints. Likewise, the advent of numerous snack policies, each containing its own individualized recommendations, makes it difficult for local ASP providers to determine exactly what types of snack they should be offering. The consolidation of existing recommendations, such as a comprehensive set of guidelines for the selection of nutritious snacks, might assist ASP in meeting policy-driven change initiatives in more informed and systematic ways.

At present, no information exists on the extent to which existing policies share any uniformity or reflect common goals. It is essential to identify the scope of existing policies so that their common and unique strengths can be highlighted and drawn upon to develop wide-scale recommendations with greater potential for effective adoption and adaptation. The purpose of the present study, therefore, was to systematically review existing policies regarding the nutritional quality of snacks served in the ASP setting. The compilation of this information can provide both practitioners and policy makers with a resource on the extent and nature of policies that currently exist. Additionally, such information can be used to inform the discourse on developing nationally recognized policies for ASP.

## Methods

The following methodology was adopted from a recent review of physical activity policies in the ASP setting<sup>(13)</sup>. Policy was defined as a formal statement that defines priorities for action, goals and/or strategies, as well as accountabilities of involved actors<sup>(14)</sup>. The policies targeted in the current review were written policies that outline the nutritional quality of snacks that should be (in the case where mandatory participation is expected, e.g. the Child and Adult Care Food Program) or are suggested

to be (in the case where voluntary adoption is preferred) served. These include all written documents that pertain to suggested number of servings, types of food recommended (e.g. fruits and vegetables), the types of foods to limit (e.g. sugar-sweetened beverages), and total energy and percentage of fat and sugar from foods.

A three-stage process was used to identify all relevant documentation. Stage 1 consisted of identifying all state-level after-school organizations from existing registries of state after-school networks ([www.afterschoolalliance.com](http://www.afterschoolalliance.com) and [www.statewideafterschoolnetworks.net](http://www.statewideafterschoolnetworks.net)). These organizations are national leaders in the advocacy of policies to improve the ASP environment and therefore represent one of the largest networks of ASP. Additional web-based searches were conducted by using a combination of 'after school', 'afterschool' and each state's name. Reviews of national ASP organizations' websites and the US Department of Agriculture's (USDA) website were also performed to identify documentation related to policies for the nutritional quality of snacks served in ASP. Stage 2 consisted of keyword searches on all state and national organizations' websites identified in Stage 1. Keywords used were 'snacks', 'food', 'diet', 'fruit', 'vegetable', 'beverage', 'drink', 'fat' and 'sugar'. Additional keywords for 'policy', 'standards', 'guidelines', 'recommendations' and/or 'quality' were used. Finally, the keyword 'obesity' was used given the link between dietary intake and unhealthy weight gains. All relevant documentation was retrieved and reserved for the final stage. Stage 3 consisted of systematically reviewing the documents retrieved from Stage 2. All relevant information regarding nutritional standards was extracted into standardized forms. Information was extracted and compiled by two of the authors (F.T. and Y.K.).

## Results

A total of seventeen state and/or national organizations were identified that had documentation related to specifying the nutritional quality of snacks to be served in the ASP setting (see Table 1). Of these, the majority (thirteen organizations) endorsed the nutritional guidelines as outlined by the USDA National School Lunch Program/Child and Adult Care Food Program (NSLP/CACFP). This resulted in a total of five unique policies (four organizations and the USDA, see Table 2). Common food and beverage items and the specific policy phrasing across the five policies are presented in Table 2. A total of thirteen major categories were represented across the five policies. These categories were: (i) sugar-sweetened beverages; (ii) milk/dairy; (iii) water; (iv) fruit/vegetables; (v) vegetables; (vi) meats and meat alternatives; (vii) breads/grains; (viii) energy content; (ix) high-sugar/fat/salt foods; (x) mixed products (e.g. trail mix); (xi) caffeine; (xii) dried fruit; and (xiii) frying. The most comprehensive policy was from the Institute of Medicine (IOM) Nutrition

**Table 1** Identified after-school organizations/programmes and after-school snack policy guidelines

Organization(s)/programme	Endorses USDA standards	Guideline (URL) or website
Action For Healthy Kids/ReCharge! Program	✓	Healthy snacks ( <a href="http://www.actionforhealthykids.org/assets/recharge-pdfs/healthysnacks.pdf">http://www.actionforhealthykids.org/assets/recharge-pdfs/healthysnacks.pdf</a> ) Healthy After-school Snack Guide for School Nutrition Directors ( <a href="http://www.nutritionexplorations.org/pdf/sfs/AFHKsnackguide.pdf">http://www.nutritionexplorations.org/pdf/sfs/AFHKsnackguide.pdf</a> )
Afterschool Alliance	✓	<a href="http://www.afterschoolalliance.org/">http://www.afterschoolalliance.org/</a>
Alliance for a Healthier Generation*	✓	Before & Afterschool Toolkit, p. 4 ( <a href="http://www.healthiergeneration.org/uploadedFiles/For_Schools/_New_Builder_Pages/Toolkits/BeforeAfterschoolToolkit.pdf">http://www.healthiergeneration.org/uploadedFiles/For_Schools/_New_Builder_Pages/Toolkits/BeforeAfterschoolToolkit.pdf</a> ) Competitive (Snack) Foods Guideline ( <a href="http://www.healthiergeneration.org/companies.aspx?id=2540">http://www.healthiergeneration.org/companies.aspx?id=2540</a> )
American Academy of Pediatrics, American Public Health Association & National Resource Center for Health and Safety in Child Care and Early Education	✓	Caring for Our Children National Health and Safety Performance Standards: Guidelines for Out-of-Home Child Care, 2nd ed., p.150 ( <a href="http://nrckids.org/CFOC/PDFVersion/National%20Health%20and%20Safety%20Performance%20Standards.pdf">http://nrckids.org/CFOC/PDFVersion/National%20Health%20and%20Safety%20Performance%20Standards.pdf</a> )
National Center for Chronic Disease and Health Promotion/Coordinated School Health Program	✓	<a href="http://www.cdc.gov/HealthyYouth/CSHP/">http://www.cdc.gov/HealthyYouth/CSHP/</a>
USDA, Food and Nutrition Service/Federal Summer Food Service Program (SFSP)	✓	<a href="http://www.fns.usda.gov/cnd/summer/">http://www.fns.usda.gov/cnd/summer/</a>
Food Research and Action Center	✓	Afterschool Guide, pp. 7–11 ( <a href="http://www.frac.org/Afterschool_Guide.pdf">http://www.frac.org/Afterschool_Guide.pdf</a> )
National Afterschool Association	✓	<a href="http://www.naaweb.org/">http://www.naaweb.org/</a>
National Center for Quality Afterschool	✓	<a href="http://www.sedl.org/pubs/fam95/228.html">http://www.sedl.org/pubs/fam95/228.html</a>
NIOST (National Institute on Out-of-School Time)	✓	<a href="http://www.niost.org/">http://www.niost.org/</a>
School Nutrition Association	✓	SMART Snacking at School. Successful Implementation of Afterschool Snacks in the National School Lunch Program ( <a href="http://www.schoolnutrition.org/uploadedFiles/School_Nutrition/102_ResourceCenter/RunningYourProgram/AfterSchoolSnacksToolkit/AfterschoolSnackToolkit.pdf?n=4892">http://www.schoolnutrition.org/uploadedFiles/School_Nutrition/102_ResourceCenter/RunningYourProgram/AfterSchoolSnacksToolkit/AfterschoolSnackToolkit.pdf?n=4892</a> ) Summer Feeding Toolkit ( <a href="http://www.schoolnutrition.org/uploadedFiles/School_Nutrition/102_ResourceCenter/RunningYourProgram/SummerFeedingToolkit/SummerToolkit.pdf?n=4692">http://www.schoolnutrition.org/uploadedFiles/School_Nutrition/102_ResourceCenter/RunningYourProgram/SummerFeedingToolkit/SummerToolkit.pdf?n=4692</a> )
US Department of Health and Human Services, Administration for Children and Families	✓	Federal Child Nutrition Funds Supporting School-Age Programs ( <a href="http://nccic.acf.hhs.gov/afterschool/fed_nutrition_funds.html">http://nccic.acf.hhs.gov/afterschool/fed_nutrition_funds.html</a> )
USDA, Food and Nutrition Service/National School Lunch Program & Child and Adult Care Food Program (NSLP & CACFP)		Child and Adult Care Food Program: Aligning Dietary Guidance for All ( <a href="http://iom.edu/Reports/2010/Child-and-Adult-Care-Food-Program-Aligning-Dietary-Guidance-for-All.aspx">http://iom.edu/Reports/2010/Child-and-Adult-Care-Food-Program-Aligning-Dietary-Guidance-for-All.aspx</a> ) Child and Adult Care Food Program, Meal Patterns, Child snack (Includes Afterschool snack) ( <a href="http://www.fns.usda.gov/cnd/care/programbasics/meals/meal_patterns.htm#Child_Snack">http://www.fns.usda.gov/cnd/care/programbasics/meals/meal_patterns.htm#Child_Snack</a> ) Subchapter A—Child Nutrition Programs, p. 29 ( <a href="http://www.fns.usda.gov/cnd/governance/regulations/7cfr210_09.pdf">http://www.fns.usda.gov/cnd/governance/regulations/7cfr210_09.pdf</a> )
Harvard School of Public Health Prevention Research Center		Youth Nutrition and Physical Activity Guidelines for Out-of-School Time Programs ( <a href="http://www.hsph.harvard.edu/research/prc/files/nutrition_and_pa_environmental_standards_for_ost_061710.pdf">http://www.hsph.harvard.edu/research/prc/files/nutrition_and_pa_environmental_standards_for_ost_061710.pdf</a> )
Institute of Medicine, Committee on Nutrition Standards for Foods in Schools/Nutrition Standards for Foods in Schools Tier 1		Nutrition Standards for Foods in Schools: Leading the Way Toward Healthier Youth ( <a href="http://www.rocklandsteps.org/files/IOM_School_Foods_Report_4-07.pdf">http://www.rocklandsteps.org/files/IOM_School_Foods_Report_4-07.pdf</a> )
California Department of Education*		Standards for Snacks in After School Programs ( <a href="http://www.cde.ca.gov/ls/nu/as/afterschoolnutstan.asp">http://www.cde.ca.gov/ls/nu/as/afterschoolnutstan.asp</a> )

USDA, US Department of Agriculture.

\*Developed additional guidelines added to the USDA guidelines (see Table 2).

**Table 2** Nutrition standards across five national and state organizations providing after-school programmes

Food item	National or state organization (programme)					
	USDA (NSLP/CACFP)†	Alliance for a Healthier Generation	Harvard School of Public Health Prevention Research Center (Youth Nutrition and Physical Activity Guidelines for Out-of-School Time Programs)	Institute of Medicine Committee on Nutrition Standards for Foods in Schools (Nutrition Standards for Foods in Schools Tier 1)	California Department of Education (Standards for Snacks in After School Programs)†	Proposed general nutritional guidelines based on existing recommendations
Fruit/Vegetable/ Juice	<p><math>\frac{1}{2}</math> to 1 cup, twice weekly</p> <p>Fruits are a separate category and servings</p> <p>A serving of fruit(s) or full-strength fruit juice, or an equivalent quantity of any combination of these foods</p> <p>Juice may not be served when milk is served as the only other component</p>	<p>Total fat: 35%</p> <p>Saturated fat: 10%</p> <p>Trans fat: 0 g</p> <p>Sugar by weight: 35%</p> <p>Na: 480 mg</p> <p>(if contains at least two of the following: 2 g fibre; or 5 g protein; or 10% DV vitamin A, C, E, folate, Ca, Mg, K or Fe; or <math>\frac{1}{2}</math> serving (<math>\frac{1}{4}</math> cup) fruit or vegetables)</p>	<p>Serve Fruits and Vegetables every day</p> <p>Do not count potatoes as a vegetable</p> <p>Serve a variety of fruits and vegetables in a rainbow of colours (dark green, deep orange and red)</p> <p>Choose whole fruit more often than fruit juice for its superior nutritional value</p> <p>Set limits on juice. A 6-oz serving of 100% juice is considered a serving of fruit. Limit juice to 1 serving/d for young children (aged 1–6 years) and 2 servings/d for children aged 7 years and older</p>	<p>100% fruit juice in 4-oz portion as packaged for elementary/middle school and 8 oz (two portions) for high school</p>	<p>Fruit-based drinks that are composed of no less than 50% fruit juice and have no added sweetener</p> <p>Vegetable-based drinks that are composed of no less than 50% vegetable juice and have no added sweetener</p>	<p>Serve Fruits and Vegetables a minimum of 2 servings/week (<math>\frac{1}{2}</math> to 1 cup) each (total of 4 servings)</p> <p>Do not count potatoes as a vegetable</p> <p>Serve a variety of fruits and vegetables in a rainbow of colours (dark green, deep orange and red)</p> <p>Choose whole fruit more often than fruit juice for its superior nutritional value</p> <p>Set limits on juice. A 6-oz serving of 100% juice is considered a serving of fruit. Limit juice to 1 serving/d for young children (aged 1–6 years) and 2 servings/d for children aged 7 years and older</p>
Milk (Dairy Products)	<p><math>\frac{1}{2}</math> cup, twice weekly</p> <p>Must be fat-free or low-fat (1% fat)</p> <p>Flavoured milk must be fat-free and is allowed only for at-risk after-school programmes</p> <p>A limited amount of fat-free or low-fat yoghurt is allowed as a milk substitute</p>	<p>Low-fat and fat-free dairy:</p> <p>Total fat: 35%</p> <p>Saturated fat: 10%</p> <p>Trans fat: 0 g</p> <p>Sugar by weight: 35%</p> <p>Na: 480 mg</p> <p>Cheese may be reduced-fat or part skimmed in 1.5-oz portions</p> <p>One egg or egg equivalent with no added fat is permitted</p>	<p>Offer low-fat or skimmed milk as one of the primary beverage choices</p> <p>Children under 2 years old should continue drinking whole milk for proper growth and development</p> <p>Serve dairy products made with low-fat or fat-free milk to children over age 2 years</p>	<p>Low-fat and non-fat milk:</p> <ul style="list-style-type: none"> <li>- lactose-free and soya beverages are included</li> <li>- flavoured milk with no more than 22 g total sugars/8-oz serving</li> </ul>	<p>2% fat milk, 1% fat milk, non-fat milk, soya milk, rice milk and other similar non-dairy milk that does not contain more than 28 g total added sugars/8-oz serving</p>	<p>Serve low-fat and non-fat milk, a minimum of 2 servings/week (<math>\frac{1}{2}</math> cup):</p> <ul style="list-style-type: none"> <li>- lactose-free and soya beverages are included</li> <li>- flavoured milk with no more than 22 g total sugars/8-oz serving</li> </ul>
Bread/Grains	<p><math>\frac{1}{2}</math> to 2 oz equivalent, twice weekly</p> <p>A serving of wholegrain or enriched bread; or an equivalent serving of cornbread, biscuits, rolls, muffins, etc., made with wholegrain or enriched meal or flour; or a serving of cooked wholegrain or enriched pasta or noodle products such as macaroni, or cereal grains such as rice, bulgur, or corn grits; or an equivalent quantity of any combination of these foods</p>	<p>No guideline</p>	<p>Select cereals and breads that list whole grains as the first ingredients on the label</p> <p>Look for products containing <math>\geq 3</math> g fibre/serving and <math>\leq 5</math> g sugar/serving</p>	<p>Whole grains</p>	<p>Wholegrain products are highly recommended</p>	<p>Serve whole grains a minimum of 2 servings/week (<math>\frac{1}{2}</math> to 2 oz equivalent)</p> <p>Select cereals and breads that list whole grains as the first ingredients on the label</p> <p>Look for products containing <math>\geq 3</math> g fibre/serving and <math>\leq 5</math> g sugar/serving</p>

Table 2 Continued

Food item	National or state organization (programme)					
	USDA (NSLP/CACFP)†	Alliance for a Healthier Generation	Harvard School of Public Health Prevention Research Center (Youth Nutrition and Physical Activity Guidelines for Out-of-School Time Programs)	Institute of Medicine Committee on Nutrition Standards for Foods in Schools (Nutrition Standards for Foods in Schools Tier 1)	California Department of Education (Standards for Snacks in After School Programs)†	Proposed general nutritional guidelines based on existing recommendations
Water	No guideline	No guideline	Offer water as one of the primary beverage choices	Water without flavouring, additives or carbonation	Drinking water with no added sweetener	Offer water as one of the primary beverage choices
High-Sugar, High-Fat & High-Salt Foods	Amounts of solid fats, added sugars, <i>trans</i> fats and Na are to be limited in all meals/snacks Foods high in added sugars and/or Na are to be served infrequently, if at all Labels must state zero <i>trans</i> fats, food specifications limit highly processed and high-fat meats and foods, moderate use of healthy fats is encouraged	No guideline	Read labels to select foods with no <i>trans</i> fat Avoid products with the words 'partially hydrogenated vegetable oil' or 'shortening' on the ingredient list Encourage parents to limit meals at fast-food restaurants to once weekly Fast-food burgers, fries and fried chicken are often high in saturated and <i>trans</i> fats. Avoid ordering 'super sized' portions Educate parents on the importance of purchasing and preparing foods with healthy fats. For example, serve fish (including chunk light tuna) 1–2 times/week, nuts and seeds (unless nut allergies are present), choose chicken and lean cuts of beef over more fatty meats, and use cooking oils instead of butter, lard or shortening	No more than 35 % of total energy from fat Less than 10 % of total energy from saturated fat Zero <i>trans</i> fat 35 % of energy or less from total sugars (except yoghurt – no more than 30 g total sugars/8-oz portion – this includes sugar-sweetened beverages) ≤200 mg Na/portion as packaged	No artificial <i>trans</i> fat No more than 35 % of total energy from fat No more than 10 % of total energy from saturated fat No more than 35 % of total weight from sugar, including naturally occurring and added sugar	No more than 35 % of total energy from fat Less than 10 % of total energy from saturated fat Zero <i>trans</i> fat 35 % of energy or less from total sugars (except yoghurt – no more than 30 g total sugars/8-oz portion – this includes sugar-sweetened beverages) ≤200 mg Na/portion as packaged
Energy	Energy controlled by limiting foods high in solid fats and added sugars	628 kJ/150 kcal (elementary) 753 kJ/180 kcal (middle) 837 kJ/200 kcal (high)	No guideline	837 kJ/200 kcal or less	No more than 732 kJ/175 kcal per individual food item (for elementary-school students) No more than 1046 kJ/250 kcal per individual food item (for middle-, junior high- or high-school students)	No more than 732 kJ/175 kcal per individual food item (for elementary-school students) No more than 1046 kJ/250 kcal per individual food item (for middle-, junior high- or high-school students)

Table 2 Continued

Food item	National or state organization (programme)					
	USDA (NSLP/CACFP)†	Alliance for a Healthier Generation	Harvard School of Public Health Prevention Research Center (Youth Nutrition and Physical Activity Guidelines for Out-of-School Time Programs)	Institute of Medicine Committee on Nutrition Standards for Foods in Schools (Nutrition Standards for Foods in Schools Tier 1)	California Department of Education (Standards for Snacks in After School Programs)†	Proposed general nutritional guidelines based on existing recommendations
Sugar-Sweetened Beverages	No guideline	No guideline	Do not serve sugar-sweetened beverages (soda, fruitaides, sweetened iced tea and sports drinks) Encourage parents to limit sugar-sweetened beverages to two 8-oz servings/week at home	No guideline	No guideline	Do not serve sugar-sweetened beverages (soda, fruitaides, sweetened iced tea and sports drinks) Encourage parents to limit sugar-sweetened beverages to two 8-oz servings/week at home
Meat/Alternatives	$\frac{1}{2}$ to 1 oz equivalent, twice weekly Nuts and seeds and their butters listed in programme guidance are nutritionally comparable to meat or other meat alternatives based on available nutritional data Acorns, chestnuts and coconuts are excluded and shall not be used as meat alternatives due to their low protein content	Nuts, nut butters and seeds: Total fat: exempt Saturated fat: exempt Trans fat: 0 g Sugar by weight: 35 % Na: 230 mg	No guideline	No guideline	No guideline	
Vegetables	$\frac{1}{2}$ to 1 cup, twice weekly Must provide a variety, including dark green leafy, bright yellow/orange, legumes, Na content limited, starchy vegetables limited					
Mixed Products	No guideline	Fruit with nuts (trail mix): - product must contain only fruit, nuts and/or seeds and must have no added sweeteners Total fat: exempt Saturated fat: 10 % Trans fat: 0 g Sugar by weight: 35 % Na: 230 mg	No guideline	One or more servings as packaged of fruit, vegetable or wholegrain product	No guideline	
Caffeine	No guideline	No guideline	No guideline	Caffeine-free, with the exception of trace amounts of naturally occurring caffeine substances	No guideline	



Table 2 Continued

Food item	National or state organization (programme)					Proposed general nutritional guidelines based on existing recommendations
	USDA (NSLP/CACFP)†	Alliance for a Healthier Generation	Harvard School of Public Health Prevention Research Center (Youth Nutrition and Physical Activity Guidelines for Out-of-School Time Programs)	Institute of Medicine Committee on Nutrition Standards for Foods in Schools (Nutrition Standards for Foods in Schools Tier 1)	California Department of Education (Standards for Snacks in After School Programs)‡	
Dried fruit with no added sugar	No guideline	Total fat: 0 g Saturated fat: 0 g Trans fat: 0 g Na: 230 mg	No guideline	No guideline	No guideline	
Frying	No guideline	No guideline	No guideline	No guideline	Not being deep fried‡, par fried§ or flash fried   by the entity preparing the snack Not being deep fried, par fried, flash fried as part of the manufacturing process unless an 'acceptable' oil is used such as canola, safflower, sunflower, corn, olive, soyabean, peanut or a blend of these oils, typically liquid at room temperature and known for its positive cardiovascular benefit	

USDA, US Department of Agriculture; NSLP, National School Lunch Program; CACFP, Child and Adult Care Food Program.

\*Snacks will provide two different food components in a serving size tailored to the age group's needs over the course of a 5-day week, the food components provided will include two servings of fruit, one serving of an orange vegetable, one serving of a non-starchy vegetable, two servings of grain/bread, two servings of lean meat or meat alternative, and two servings of low-fat or non-fat milk; must meet daily and weekly patterns to provide flexibility,

†The standards do not apply to individually packaged portions of nuts, nut butters, seeds, eggs, individually packaged cheese, fruit, vegetables that have not been deep fried, and legumes.

‡A food item is cooked by total submersion in oil or fat.

§A food item is fried to reach an internal temperature of 70°C (160°F) then is cooled to room temperature so that it may be refrigerated or frozen for future frying.

||A food item is quickly fried on both sides in oil with a temperature of 204°C (400°F) or higher.

Standards for Foods in School Tier 1 with eight major categories represented, followed by the California Department of Education Standards for Snacks in Afterschool Programs (seven categories), and the Harvard School of Public Health Prevention Research Center: Youth Nutrition and Physical Activity Guidelines for Out-of-School Time Programs, the Alliance for a Healthier Generation and the USDA NSLP/CACFP (six categories).

The most common recommendation was for serving dairy (low-fat or 2% fat milk) and serving fruits/vegetables (five out of five policies included each), followed by information related to the selection of or serving breads/grains, energy limits and reducing high-fat and sugar-added foods (four out of five policies). The majority of recommendations were written as a guide to the selection of a given food/beverage item, with no requirements for frequency of servings. The new CACFP guidelines called for 2 servings of a given food item weekly with all food items served at least twice over a 5-day week. Only four recommendations were present that explicitly called for either the removal (i.e. do not serve) or serving of a food/beverage item daily. The Harvard guidelines indicated that sugar-sweetened beverages (e.g. soda, pop, fruitaides, sweetened iced tea, sports drinks) should not be served and that fruits and vegetables should be served daily. The IOM suggests all foods/beverages should be caffeine-free, while the California guidelines call for no fried foods. Of the guidelines that specified the energy content of snacks, total energy ranged from 628 kJ (150 kcal) for elementary-school children to no more than 1046 kJ (250 kcal) for middle- and high-school children.

## Discussion

ASP snacks represent an important contribution to a child's daily dietary intake. However, the majority of snacks served in this setting are of low nutritional value<sup>(10-12)</sup> and contribute to the consumption of empty calories<sup>(9)</sup>. The adoption and compliance with the identified nutrition policies should lead to creating healthier after-school environments that promote and support good nutritional habits. A number of policies and standards have been developed to guide the nutritional content of snacks served in ASP. The food/beverage guidelines in the policies ranged considerably, with the majority of the differences resting on the wording of the recommendation rather than whether to recommend or not recommend a specific food/beverage. Despite these differences a set of common items was represented across policies (e.g. milk/dairy, fruits and vegetables) and these can be viewed as core nutritional guidelines for ASP. Through an iterative process consisting of input from community practitioners and leaders in the field of after-school programming, a set of general food/beverage guidelines were proposed. These general guidelines are highlighted in Table 2.

The specific wordings were taken directly from one or more of the existing guidelines identified in the review and, where necessary, modified to include the new recommendations for the CACFP snack reimbursement programme. Moreover, the guidelines selected for inclusion in the general guidelines were determined by the clarity of the original guideline along with the ability to easily operationalize the guideline to determine compliance. This set of guidelines can serve as a basis for all ASP, with the understanding that these recommendations potentially represent a consensus among state and national organizations on the nutritional content of snacks served during ASP. Importantly, the proposed guidelines maintain compliance with the USDA CACFP reimbursement programme, which calls for the serving of two of the following five foods a minimum of twice weekly: fruits/fruit juice, vegetables, cereals/grains/breads, lean meats and meat alternatives, and low-fat/fat-free milk.

Unfortunately, the review was unable to identify how many ASP in the USA participate in and comply with any of the identified policies. The USDA NSLP/CACFP, however, reports on the number of snacks served as part of its reimbursement programme. As of October 2008, the NSLP/CACFP served snacks to 1 579 029 children in ASP nationally (E Peterson, Policy Director at the Afterschool Alliance, personal communication). Given that over 8.4 million youth nationwide attend ASP<sup>(1)</sup>, this leaves a substantial number of youth attending ASP that do not have to adhere to nutritional guidelines for the snacks served. Furthermore, the current review is limited to snack policies in US ASP. Our attempts to locate nutritional policies and standards for after-school-type programmes in other countries were unsuccessful. Thus, the extent to which policies that do exist are similar, and are widely adopted, remains unanswered. In the instance where snack policies need to be developed, those identified herein can serve as a starting place to inform the discussion.

The issue revolving around oversight and compliance is crucial. The USDA has the only nutritional guidelines to which ASP have to adhere as part of being reimbursed for snack purchases. Since 1998, the USDA NSLP or CACFP has reimbursed snacks and hot meals (where provided) for ASP (see [www.fns.usda.gov/cnd/care](http://www.fns.usda.gov/cnd/care)). The CACFP was developed to serve foods to children attending at-risk ASP (defined as a minimum of 50% of children attending are eligible for free or reduced-price meals) for the CACFP. The primary difference for programmes receiving NSLP reimbursement is they cannot operate on weekends/holidays and such programmes do not have to be located within an eligible area (minimum of 50% children eligible for free or reduced-price meals). Consistent with the definition of ASP presented previously, the NSLP/CACFP does not include reimbursements for organized sports and activity clubs. The oversight of compliance to the NSLP/CACFP guidelines is conducted by state agencies and focuses primarily on menu reviews and claim records for reimbursements.

Conversely, voluntary compliance with the other policies is unlikely to result in substantial changes to the nutritional quality of snacks served, particularly when the evidence to date suggests programmes are falling short of meeting policy standards<sup>(10–12)</sup>. If the identified policies are to be widely adopted and complied with, additional supports need to be given to ensure successful uptake. For example, price barriers to serving fruits/vegetables and whole grains should be reduced and staff professional development related to the nutritional needs of children needs to not only to be provided but ongoing. It is likely that other supports are also required and future research with ASP providers should focus on identifying how best to facilitate policy implementation.

The systematic review conducted for the present study was intended to represent all available policies across the USA. However, it is possible that other nutrition policies have been developed, yet were not located by the review. We therefore cannot rule out the possibility that other food/beverage policies have been developed and adopted by ASP. Nevertheless, the nutrition policies identified are comprehensive in the number of food/beverage items represented and therefore likely exemplify the extent of food/beverage policies pertinent to the ASP setting.

The compilation of these policies can serve to inform both public policy and ASP practice. The identification of and agreement on a single set of nutritional policy standards would assist in programme oversight and compliance, as well as harnessing the purchasing power of ASP if all were buying and serving identical nutritious snacks. Based on available evidence, the voluntary adoption by individual ASP of one or more of the standards identified in Table 2 would likely enhance the nutritional content of existing snacks. Taken together, additional work is required to unify nutritional standards for all ASP as well as developing support systems for ease of adoption and implementation to ensure snacks contribute to a child's healthy dietary intake.

### Acknowledgements

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sector. There are no conflicts of interest regarding the material presented in this study. All authors contributed to the drafting and editing of the manuscript. M.W.B. conceptualized the study.

### References

- JCPenney Afterschool Fund & Afterschool Alliance (2009) America After 3 PM. The most in-depth study of how America's children spend their afternoons. [http://www.afterschoolalliance.org/documents/AA3\\_Full\\_Report.pdf](http://www.afterschoolalliance.org/documents/AA3_Full_Report.pdf) (accessed March 2009).
- Jago R, Jonker ML, Missaghian M *et al.* (2006) Effect of 4 weeks of Pilates on the body composition of young girls. *Prev Med* **42**, 177–180.
- Weintraub DL, Tirumalai EC, Haydel KF *et al.* (2008) Team sports for overweight children: the Stanford Sports to Prevent Obesity Randomized Trial (SPORT). *Arch Pediatr Adolesc Med* **162**, 232–237.
- Wilson DK, Friend R, Teasley N *et al.* (2002) Motivational versus social cognitive interventions for promoting fruit and vegetable intake and physical activity in African American adolescents. *Ann Behav Med* **24**, 310–319.
- Lubans D & Morgan P (2008) Evaluation of an extra-curricular school sport programme promoting lifestyle and lifetime activity for adolescents. *J Sports Sci* **26**, 519–529.
- Vizcaino VM, Aguilar FS, Gutierrez RF *et al.* (2008) Assessment of an after-school physical activity program to prevent obesity among 9- to 10-year-old children: a cluster randomized trial. *Int J Obes (Lond)* **32**, 12–22.
- American Academy of Pediatrics, American Public Health Association & National Resource Center for Health and Safety in Child Care and Early Education (2010) *Preventing Childhood Obesity in Early Care and Education Programs: Selected Standards from Caring for Our Children: National Health and Safety Performance Standards; Guidelines for Early Care and Education Programs*, 3rd ed. Aurora, CO: National Resource Center for Health and Safety in Child Care and Early Education.
- Jahns L, Siega-Riz AM & Popkin BM (2001) The increasing prevalence of snacking among US children from 1977 to 1996. *J Pediatr* **138**, 493–498.
- Reedy J & Krebs-Smith SM (2010) Dietary sources of energy, solid fats, and added sugars among children and adolescents in the United States. *J Am Diet Assoc* **110**, 1477–1484.
- Mozaffarian RS, Wiecha JL, Roth BA *et al.* (2010) Impact of an organizational intervention designed to improve snack and beverage quality in YMCA after-school programs. *Am J Public Health* **100**, 925–932.
- Cassady D, Vogt R, Oto-Kent D *et al.* (2006) The power of policy: a case study of healthy eating among children. *Am J Public Health* **96**, 1570–1571.
- Coleman KJ, Geller KS, Rosenkranz RR *et al.* (2008) Physical activity and healthy eating in the after-school environment. *J Sch Health* **78**, 633–640.
- Beets MW, Wallner M & Beighle A (2010) Defining standards and policies for promoting physical activity in afterschool programs. *J Sch Health* **80**, 411–417.
- Schmid TL, Pratt M & Witmer L (2006) A framework for physical activity policy research. *J Phys Act Health* **3**, Suppl. 1, S20–S29.