



## Adolescent health brief

## Two Years Later: Wellness Councils and Healthier Vending in a Cohort of Middle and High Schools

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## A B S T R A C T

**Purpose:** To examine the association between school wellness council structure over 2 years and low-nutrient, energy-dense vending fare assessed as a food score (range: 0–7), following enactment of federal legislation.

**Methods:** Multivariate linear regression was used to examine 2006/2007 and 2008/2009 data among a cohort of middle ( $n = 16$ ) and high ( $n = 38$ ) schools located in a Midwest metropolitan area.

**Results:** Schools with district and school councils had a significantly lower mean food score (3.28) than schools with district-only (4.50) and no councils (4.99).

**Conclusions:** Wellness councils, particularly a structure that includes both a district and school council, may contribute to decreasing low-nutrient, energy-dense food/beverage availability in middle and high schools.

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The 2006/2007 school year found most U.S. schools responding to the Child Nutrition and WIC Reauthorization Act of 2004 that required school districts participating in the federal school meal program to establish policies that included nutrition guidelines for all foods/beverages offered at school and policy development involving key stakeholders, such as parents and school representatives [1]. National data suggest that many schools and/or school districts use health/wellness councils to develop and disseminate nutrition policies [2].

In middle and high schools, vending machines (VM) are a prevalent source of low-nutrient, energy-dense (LNE) foods/beverages and a policy target [3,4]. Research conducted in 2006/2007 found that LNE vending fare was lower in middle and high schools reporting a district-only or district and school wellness council structure, with the latter offering the greatest benefit when compared with the schools without councils [5]. However, because of the weaknesses with the federal legislation related to policy implementation and enforcement, there is concern about

council sustainability and meaningful policy making over time [6–8]. The aims of the current study were to assess the wellness council structure in 2006/2007 and 2008/2009 in a cohort of public middle and high schools and to examine the association between council structure at the two time points and availability of LNE vending fare in 2008/2009.

### Methods

Data were collected as part of a longitudinal measurement study of youth to assess obesity-related factors, conducted in Minneapolis/St. Paul, MN [9]. Study recruitment and data collection details have been reported elsewhere [5,9]. The sample for this study included 54 public middle ( $n = 16$ ) and high ( $n = 38$ ) schools that completed school-level data collection in 2006/2007 and 2008/2009. The University of Minnesota Human Subjects Research Committee approved the study.

On both measurement occasions, a survey completed by the school principal/designee asked whether the school and school district had a health/wellness advisory council. A composite variable representing wellness council structure at both time points was created as follows: district and school councils at both time points; district-only council at one or both time points; and no council at one or both time points.

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In 2008/2009, trained study staff visited schools one day and directly observed and recorded package size and kilocalories and fat grams per package for all vending items. LNEED foods/beverages, defined as snacks containing >3 g of fat/serving or >200 calories/serving and soft drinks (regular and diet), fruit drinks (not 100% fruit juice), sport drinks, and 2% or whole milk (plain or flavored), were grouped into seven categories (chocolate; other candy; baked goods not low-fat; salty snacks not low-fat; 2% or whole milk (plain or flavored); soda pop/fruit drinks; sports drinks) [3,5]. A food score was calculated on the basis of number of categories (range: 0–7). Higher scores indicated more LNEED foods/beverages. Schools without VM or VM offering only healthy items (water, 100% fruit juice) were scored as 0. Past research demonstrated a high correlation between the mean number of LNEED food/beverage items and the food score [5].

At baseline (2006/2007), information on school-level characteristics was obtained from the Minnesota Department of Education Web site, supplemented by a school representative.

A cross-sectional approach and multivariate linear regression, adjusted for school-level characteristics, were used to examine the association between the composite wellness council variable and the food score. Analyses were performed using SAS version 9.2 (SAS Institute, Cary, NC).

## Results

Most schools were suburban (91%) and high schools (70%). Mean student enrollment was 1,566 (SD: 695), and 18% (SD: 14.5%) of the students reported free/reduced lunch participation. Among the selected schools, 12 (22%) had a school and district council at both time points. At one or both time points, 33 (61%) had a district-only council and 9 (17%) reported no council (Table 1). In 2008/2009, schools with a school and district council at both time points reported a greater variety of council participants and more frequent meetings than schools with a district-only council at one or both time points (Table 2).

In adjusted multivariate analysis, having a wellness council structure at both time points was inversely associated with the food score: ( $\beta = -1.71$  [district and school at both];  $\beta = -.49$  [district-only at one or both];  $F$ -test = .07). High schools and suburban schools had higher scores than middle and urban schools ( $\beta = 2.13, p = .003$ ; and  $\beta = 2.66, p = .04$ , respectively). In post hoc adjusted analysis, the mean food score for schools with both a district and school council was significantly lower as compared with schools with district-only (3.28 vs. 4.50;  $p = .05$ ) or no council (3.28 vs. 4.99;  $p = .04$ ) at one or both time points. The mean score for schools with district-only and no council

**Table 1**  
Wellness council structure over 2 school years in a cohort of Minnesota public middle ( $n = 16$ ) and high schools ( $n = 38$ )

2006/2007	2008/2009			Total
	District-only council	School + District council	No council	
District-only council	19	9	4	32
School + District council	5	12	0	17
No council	0	1	4	5
Total	24	22	8	54

**Table 2**  
Characteristics of district and school wellness councils in a cohort of middle and high schools ( $N = 54$ ),<sup>a</sup> Minneapolis/St Paul, MN, 2008/2009

Council characteristics	District councils <sup>b</sup> ( $n = 33$ )	School councils <sup>c</sup> ( $n = 12$ )	$p$
Members			
Principals	27%	50%	.17
Parents	21%	33%	.45
Students	9%	42%	.02
School nurses	36%	42%	.74
Teachers	42%	92%	<.01
Food service staff	36%	50%	.50
Meeting frequency			
≥monthly	18%	33%	.42
VM <sup>d</sup> policy			
Yes	70%	58%	.50

<sup>a</sup> Nine schools reported no wellness council during one or both school years, 2006/2007 and 2008/2009.

<sup>b</sup> Defined as a school with only a district-level council during one or both school years, 2006/2007 and 2008/2009.

<sup>c</sup> Defined as a school with a district and school council during both school years, 2006/2007 and 2008/2009.

<sup>d</sup> VM = vending machine.

structures at one or both time points was not significantly different (4.50 vs. 4.99;  $p = .48$ ).

## Discussion

This research contributes to the dearth of empirical evidence linking school policy to school-level food practice. Study findings indicate that 2 years postenactment of federal legislation, LNEED foods/beverages remain common vending fare in middle and high schools. However, schools reporting a wellness council structure over 2 years that included both a school and district wellness council had significantly less LNEED vending fare than schools with a district-only council or no council at one or both time points. Consistent with earlier research, the added benefit of a school council is likely due to involving a greater variety of stakeholders, particularly students and teachers, and more frequent meetings [2,5], factors that foster improved policy oversight and enforcement at the school level. Stability of council structure over time may also be a factor.

Study strengths include the examination of policy and practice in a school cohort over a 2-year period and the use of objective data to categorize food/beverages. However, the cohort was a small convenience sample of mostly suburban high schools in one Midwestern metropolitan area, thus limiting generalizability. The data collected on one day may not be representative of food/beverage availability throughout the school year.

Wellness councils may be a sustainable and useful structure for developing and disseminating food policy that results in healthy food practice at the school level, particularly a structure that includes both a district and school council. Future research should replicate this study in a larger sample of more diverse schools and examine other prevalent food practices, such as the use of LNEED foods/beverages as rewards/incentives and for school fundraising [3,8], as well as the link between policy, practice, and weight outcomes among students.

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## References

- [1] Child nutrition and WIC reauthorization act of 2004. Available at: <http://www.govtrack.us/congress/bill.xpd?bill=s108-2507>. Retrieved August 10, 2010.
- [2] Jones SE, Fisher CJ, Greene BZ, et al. Healthy and safe school environment, part I: Results from the School Health Policies and Programs Study 2006. *J Sch Health* 2007;77:522–43.
- [3] O'Toole TP, Anderson S, Miller C, Guthrie J. Nutrition services and foods and beverages available at school: Results from the School Health Policies and Programs Study 2006. *J Sch Health* 2007;77:500–21.
- [4] Johnson DB, Bruemmer B, Lund AE, et al. Impact of school district sugar-sweetened beverage policies on student beverage exposure and consumption in middle schools. *J Adolesc Health* 2009;45:530–7.
- [5] Kubik MY, Lytle LA, Farbarkash K. School and district wellness councils and availability of low-nutrient, energy-dense vending fare in Minnesota middle and high schools. *J Am Diet Assoc* 2011;111:150–5.
- [6] Probart C, McDonnell E, Weirich JE, et al. Statewide assessment of local wellness policies in Pennsylvania public school districts. *J Am Diet Assoc* 2008;108:1497–502.
- [7] Story M, Kaphingst KM, Robinson-O'Brien R, Glanz K. Creating healthy food and eating environments: Policy and environmental approaches. *Annu Rev Public Health* 2008;29:1–6.
- [8] Kubik MY, Lytle LA, Farbarkash K, et al. Food use in middle and high school fundraising: Does policy support healthy practice? Results from a survey of Minnesota school principals. *J Am Diet Assoc* 2009;109:1215–9.
- [9] Lytle LA. Examining the etiology of childhood obesity: The IDEA Study. *Am J Community Psychol* 2009;44:338–49.