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Hospitals lead by poor example: An assessment of snacks, soda, and junk food availability in Veterans Affairs hospitals

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ABSTRACT

Objective: The Veterans Health Administration is the largest integrated health care system fully funded through the US government; however, compliance with government dietary recommendations within Veterans Affairs (VA) hospitals is not well known. The aim of this study was to determine which foods are available at VA hospitals and whether these foods comply with government recommendations.

Methods: Process verification for a Freedom of Information Act request was used to assess government-run inpatient and outpatient VA hospital facilities by accessing the location, quantity, and contents of vending machines. These foods and beverages were then quantified and compared with the US Department of Agriculture Dietary Guidelines for Americans 2015–2020 (eighth edition).

Results: Of the beverages supplied, 49% contained >55 g of sugar, supplying >10% of daily calories in added sugar in a single serving. Of all beverages, 50% contained >50 g of added sugar (range 17–77 g per bottle/can). The 65 available food items were comprised of 28% candy, 14% potato chips/puffed corn snacks, 11% pastries/frosted baked goods, 11% crackles/pretzels, and 8% nuts/trail mix, and the remainder consisted of jerky, pork rinds, gum, and popcorn. Nuts/trail mix and granola—items meeting nutritional guidelines—comprised five and three options in total, respectively.

Conclusions: All VA Hospitals contain vending machines providing a majority of soda, candy, and junk foods that directly conflict with healthy food choice recommendations from US governing health bodies. Few sources meeting US dietary guidelines are available in vending machines at these government-run facilities, which serve as poor examples for patients who are attempting to follow a healthy diet.

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Introduction

Rates of overweight and obesity, metabolic syndrome (MetS), and type 2 diabetes continue to rise throughout the United States. Recent trends in obesity reveal that the age-standardized prevalence of obesity among adults increased to 39.6% in 2015 to 2016 from 33.7% in 2007 to 2008 [1]. Furthermore, the prevalence of MetS increased to 34.7% in 2012, from 32.9% in 2004 [2]. According to the Centers for Disease Control and Prevention, 40% of cancer diagnoses are related to obesity [3]. In addition, studies reveal that a significant proportion of cancer diagnoses are attributable to a

combined effect of obesity, MetS, and diabetes [4]. Beyond detrimental health effects, obesity, diabetes, and MetS financially burden the health care system, evident through the \$4 billion in Veterans Administration spending on prescription drugs associated with cardiometabolic diseases in 2005 [5].

In response, the US government and medical organizations have made a push to improve dietary recommendations to combat obesity. Yet, dietary recommendations for reducing the risk for obesity, cardiovascular disease, and cancer prevention vary widely between sources [6,7]. One area that has been consistent between sources, as illustrated by the US Department of Agriculture (USDA) Dietary Guidelines for Americans 2015–2020 (eighth edition), is the recommendation of avoiding simple sugars, soda, candy, and junk foods [8]. The excessive consumption of sugar-heavy foods has been linked to nearly every major disease, including obesity, heart disease, cognitive decline, and cancer [9–11]. Furthermore, foods sweetened with added sugars produce physiological and

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psychological changes that promote dependence and overconsumption [12,13].

Hospitals and medical facilities serve as a main conduit for health care delivery and preventative care. Yet, although little is known about the exact contents of vending machines in patient-care settings, many hospitals sell these foods on their grounds, sending a mixed message to patients [14]. The Veterans Health Administration (VHA) is the largest integrated health care system within the United States, providing care at 170 medical centers. Veterans Affairs (VA) hospitals contain open access to an array of data and statistics through the Freedom of Information Act (FOIA). Because VA hospitals are fully funded through the US government, which also provides dietary guidelines for the United States, this work was conducted to quantify which of these hospitals sell foods through vending machines and how well they correspond with US dietary recommendations.

Method and materials

Hospitals were assessed via an official request after process verification for the FOIA from the VHA. The query inquired about the location and number of VA hospitals containing vending machines, and the number of vending machines within each hospital. Furthermore, a second component of the request inquired about the contents of these vending machines.

The contents of each vending machine were then analyzed from the FOIA reports. Vending machines contain mandated items by the suppliers, along with approved substitutions, and these food items were assessed. Nutritional contents of each beverage were then assessed via the USDA Food Composition Databases, pepsicobeveragefacts.com, coca-colaproductfacts.com, and myfitnesspal.com if the former sources did not contain nutritional information. The nutritional content was then compared with official government dietary guidelines to assess whether the foods presented within their facilities correlated with these guidelines.

The Dietary Guidelines specifically state that “sugar-sweetened beverages, such as soft drinks, sports drinks, and fruit drinks that are less than 100% juice, can contribute excess calories while providing few or no key nutrients.” Furthermore, although the Dietary Guidelines recommend the avoidance of the sugar-laden beverages, they also recommend limiting added sugars to <10% of daily calories. Added sugars include sugar, corn sweetener, corn syrup, dextrose, fructose, glucose, high-fructose corn syrup, honey, invert sugar, lactose, malt syrup, maltose, molasses, raw sugar, sucrose, trehalose, and turbinado sugar. Thus, we assessed which beverages by themselves would surpass this recommendation in a single sitting, or 55 g of sugar, assuming an average consumption of 2200 calories throughout the entire day.

Finally, non-beverage contents were assessed in vending machines containing packaged foods. Like beverage configurations, distributors mandate the availability of certain snacks, and these were listed as such. Approved substitutions were listed separately. Food items were tallied within the following categories: candy, cookie, potato chip/puffed corn snack, granola bar, nuts/trail mix, jerky, crackers/pretzels, pastry/frosted baked good, chewing gum, popcorn, and pork rinds.

Results

Beverage vending machines

Data from 172 VA hospital facilities throughout the United States, including Puerto Rico, were available. According to the report from the FOIA request described previously, all 172 facilities contain at least one soda or candy vending machine available to patients and visitors of the hospital (Table 1 in the accompanying Data in Brief article). In all, 2844 vending machines exist at these facilities. On average, each hospital contains 17 vending machines, with a minimum of one machine (in one hospital total) and a maximum of 57 vending machines (in one hospital total).

Various vending machine configurations were present at each hospital (see example in Fig. 1 in the accompanying Data in Brief article). Soda machines included the Glassfront Royal RVV-500, Glassfront Model 5800 Vue 40, and Pepsi Glassfront Stand Alone Model 5800. These vending machines are capable of holding cans and bottles from 12 to 20 oz. The beverages stocked in each soda machine are comprised of those required by the distributor and

those beverages allowed to be substituted (Table 2 in the accompanying Data in Brief article).

Fifty-six drink options were available in beverage vending machines. Mandated beverages totaled 31, and 25 substitution beverages were available. As the beverages found in all vending machines provided little to no nutrient value, the quantity of sugar provided by the beverages was assessed (Table 2 in the accompanying Data in Brief article). Of all mandated options, 13% (4) met the guideline requirement of 100% fruit juice or water. Of the mandated beverages, 48% (15) contained >55 g of sugar and provided >10% of daily calories in added sugar in a single serving. Nine sodas (29%) were diet. Of the substitution options, 44% (11) contained >55 g of sugar and provided >10% of daily calories in added sugar for the average man or women in a single container. Sixteen percent of beverages were diet soda and three energy drink options were available.

Forty-six percent of all drink options available contained >55 g of sugar. Furthermore, 50% of all available beverages contained >50 g of sugar per bottle (including 20 oz. bottles). Only 7% of choices (4 of available beverages) included 100% fruit juice. Of the 56 total drink choices available, 68% (38) contain added sugars, ranging in content from 17 to 77 g per bottle/can.

Food item vending machines

Several configurations were available for the sale of packaged foods, also mandating certain foods and allowing approved substitutions (see example in Fig. 2 in the accompanying Data in Brief article). There was minimal overlap between required items and approved substitutions. Thirty-two mandated foods and 26 approved substitutions were stocked in VA vending machines (Table 3 in the accompanying Data in Brief article). Two configurations (one Pepsi- and one Coke-based) contained a combination of beverages and food items that were redundant from those stocked in purely beverage or food vending machines, thus data was not relisted for them. The occurrence rate of each substitution item was not available from the FIAO data.

Of the 65 available items, 28% were candy, 14% were potato chips or puffed corn snacks, 11% were pastries or frosted baked goods, 11% were crackles or pretzels, and 8% were nuts or trail mix, with the remainder consisting of jerky, pork rinds, gum, and popcorn. Of the 38 mandated items, 32% (12) were candy, 13% (5) were pastries or frosted baked goods, 13% (5) were crackers, 11% (4) were cookies, 11% (4) were potato chips or puffed corn snacks, 8% (3) were gum packets, 5% were granola bar options (2), 5% were nut options (2, trail mix and peanuts), and 3% were jerky option (1). Of the 27 approved substitution items, 22% were candy (6), 19% were potato chips or puffed corn snacks (5), 11% were nuts or trail mix (3), 7% were cookies (2), 7% were crackers (2), 7% were pastries or frosted baked goods (2), 7% were gum (2), 7% were popcorn (2), 4% was jerky (1), and 4% were pork rinds (1).

As whole grains and nuts are part of the recommendation of the USDA Dietary Guidelines, foods were assessed for inclusion of these as one of their major ingredients. Of the 58 available foods, 12% contained nuts or whole grains (7). Three of these were granola bars, two of which contained 11 g of added sugar per serving. Three of these were only available as substitutions. The remaining foods available containing grain-based derivatives were produced with flour.

Discussion

The VHA estimates that 25% of current veterans have diabetes [15]. Furthermore, 70% of all veterans are obese or overweight

according to VHA statistics. In response, the VHA has adopted the MOVE! Weight Management Program, whose core ideas promote “healthy eating behavior, increasing physical activity, and promoting even small weight losses.” Government resources refer to several methods to manage a healthy diet, including avoidance or minimization of sugar-sweetened beverages, soft drinks, sports drinks, and fruit drinks containing <100% fruit juice because they “provide few or no key nutrients” and instead contribute “excess calories [8].” Furthermore, VHA recommendations suggest avoiding added sugars, like high-fructose corn syrup, the most common ingredient in soda.

Such recommendations are warranted because sugar-sweetened beverages are associated with obesity, MetS, and type 2 diabetes [9]. Furthermore, a diet containing foods with rapidly absorbed carbohydrates is associated with an increased risk for type 2 diabetes [16]. The link between sugar-sweetened beverages and type 2 diabetes remains consistent after adjustment for dietary calories and obesity, suggesting detrimental metabolic effects of the hyperglycemia and subsequent insulin response of these foods, which can promote insulin insensitivity over time, and eventually, MetS [17]. Furthermore, these foods may promote additional over-eating because foods and beverages sweetened with added sugars produce physiological and psychological effects that promote the overconsumption of food [12,13].

It is difficult to reconcile these recommendations for veterans when their own government-provided hospitals and facilities provide vending machines with 46% of available beverages providing well over the daily recommendation of added sugar in a single sitting, and the majority of food products in both beverage and packaged food vending machines contain the same ingredients they recommend avoiding. Furthermore, these vending machines provide little to no food options that provide tangible nutrition, questioning the motives behind their availability at facilities that are supposed to promote health and prevention, especially to a group of individuals at high risk for obesity and diabetes.

Current public policy and psychology research validate “leading by example” as an effective strategy in improving compliance to lifestyle modifications and habit formation [18,19]. Conversely, it seems likely that setting poor or conflicting examples, especially in the setting of health care, will attenuate compliance to health programs. The results of the MOVE program reveal low participation levels and poor compliance by veterans [20]. Veterans are counseled on these dietary and lifestyle changes at the same facilities that provide the foods they are being counseled to avoid. Perhaps such conflicting recommendations from the program opposed to available foods at VA facilities have provided confusion and contributed to the poor rates of health improvement. Such conflicting recommendations would be expected to make compliance difficult for veterans, but hospital visits could theoretically promote worse health by exposing them to foods that can negatively and strongly affect their risk for obesity and diabetes.

In addition, as long as these poor food choices are widely available in VA facilities, which serve as the epicenters of health for many veterans, it is difficult to expect changes within their home environment. The availability of these foods to hospital workers and staff should be considered as well. An important question that should be posed is why are any soda or candy machines available at our VA hospitals? Are we trading the health of our veterans for profits? If so, this tradeoff is precariously short sighted as prior research has demonstrated a \$440 decline in lifetime medical expenditures for each 1% reduction in body weight among Tricare beneficiaries [21]. Finally, why would vending machines compiled of foods that directly contradict our own health recommendations be available at any hospital?

Several dietary strategies exist for weight loss and maintaining a healthy diet, widely ranging from a Mediterranean diet, to plant-based approaches, to low-carbohydrate or even ketogenic diets. Philosophies and available data vary widely regarding these different approaches. However, one area of common ground and consistency within the data, illustrated by the 2015–2020 Dietary Guidelines, is the recommendation of avoiding sugary beverages, candy, cookies, and other sources of simple and refined carbohydrates that provide little to no nutritional value. The work of physicians attempting to promote the dietary guidelines is made difficult by the direct sale of foods they recommend their patients avoid. Just as smoking has been banned from hospitals owing to its association with multiple diseases and no potential health benefit, perhaps sodas, high-sugar beverages, and other packaged foods with no potential health benefit should be met with a similar fate. Simply addressing the topic of weight loss to patients by physicians has positive effects on patient weight loss activity, and we anticipate addressing the disparity in food recommendations and availability in hospitals will abate this disconnect [22].

Several limitations existed in this study. It was unclear how often each item was purchased by visitors at the VA hospitals. Furthermore, although a small minority of potential healthier packaged food were available as a choice or substitution, it was unclear how often these items were available. Regardless, these results are informative and should raise immediate awareness and prompt changes to the foods available at VA hospitals and other health care settings throughout the country. Such changes would hopefully generate a positive effect on patients’ health habits and allow physicians and hospitals to lead by example to promote a healthier lifestyle

Conclusion

All of the current government-run VA hospitals contain vending machines that sell soda, candy, and junk food, with few healthy options available to patients and visitors. These products directly conflict with healthy food choice recommendations from US governing health bodies. Hospitals serve as poor examples for veterans and patients who are attempting to follow a healthy lifestyle and may promote the unhealthy eating behaviors of patients.

Supplementary materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.nut.2018.09.028](https://doi.org/10.1016/j.nut.2018.09.028).

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