



Vending Machines and Cardiovascular Prevention: How to Implement Healthy Dietary Habits at School

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Abstract

Too many children in Europe are overweight. The unregulated marketing of unhealthy products target to children, and the installation of vending machines stocked with unhealthy snacks in public venues, are contributing factors. While innovative legislation on the regulation of the nutritional quality of food and beverages sold in vending machines in schools has become law in some European countries, it is not on the political agenda in others. However, an easy alternative solution could be to introduce a clause in all new tenders for vending machines, which states that the successful supplier must commit to ensuring that at least 50% of the products sold have a medium-to-small portion size, are low in saturated fat, salt, calories, and have no added sugar. This strategy, called “A vending machine for a friend”, was developed at CNR of Rome, and with the support of the SIPREC, the LHA and the EHN, and with the alliance with teachers and students, is being rolled out in some Italian and Lithuanian high schools. Creating a healthy nutritional environment with the aim of encouraging healthier choices, is a real possibility.

Keywords Vending machines · Obesity · Adolescents

The United Nations’ Convention on the Rights of the Child states that every child has the right to grow up in a healthy environment [1]. However, children often grow up in “obesogenic environments”—settings that promote unhealthy eating and discourage physical activity [2]. In obesogenic environments, unhealthy foods are cheap and readily available, while healthier foods are less easy to find and are often expensive [3]. As a result, many children in Europe are overweight [4]. Obesity prevention is a global public health priority and if we do not act swiftly and with determination, the rate of decline in cardiovascular related events and death may start to rise again. We could see a reverse in the gains in life expectancy that have been achieved over the past decades

in adult generations, in future generations [5]. Put simply, future generations are likely to have a shorter life expectancy than their parents. This scenario also poses issues of the economic sustainability of national health systems.

This is particularly true for Italy, where the shift away from traditional diets and lifestyles; and easy access to cheap, unhealthy snacks has led to a prevalence of overweight and obesity which has reached 22% in boys and 9% in girls at age 15, one of the worst rates in Europe [6]. Moreover, in Italy, physical activity tends to decline during adolescence [4].

Although genetic factors may underlie the propensity of individuals to become obese, the pace at which obesity prevalence has grown at population level during recent decades, points to social and environmental causes [6]. One contributing factor is the installation of vending machines stocked with unhealthy snacks, located strategically in public venues. This is partly a result of the unregulated marketing of unhealthy products that target children. Such marketing has a negative influence on children’s dietary preferences, purchasing behaviour and consumption [6, 7]. In practice, traditional vending machines invariably contain foods high in fat, sugar, salt and calories. A healthy remedy could be to replace the traditional vending machine with one stocked

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with low-fat, low-sugar, low-salt and low-calorie options. To succeed, it is not enough to rely on the goodwill of retailers, who are often less mindful of healthy snacking, and who tend to be complacent because their sales are booming.

Moreover, the common good is not always high on the political agenda. Although vending machines have been banned from school premises in some European countries (e.g. Denmark, France, Slovakia and Slovenia) and innovative legislation on the regulation of the nutritional quality of food and beverages sold in vending machines in schools has been introduced in others (e.g. Bulgaria, Hungary, Latvia, Lithuania, and Romania) [8], elsewhere, regulation is not on the political agenda.

Italy is an interesting case in this respect. Innovative draft legislation on the regulation of the nutritional quality of food and beverages sold in vending machines installed in public venues and accessible to children and adolescents (“Disposizioni per garantire l’adeguatezza dell’apporto nutrizionale degli alimenti e delle bevande somministrati mediante distributori automatici situati in luoghi pubblici frequentati da minori”), was tabled before the Social Affairs Committee of the Italian Parliament, by Senators D’Ottavio, Fiorio, Mongiello, et al., in June 2016 [9]. Regrettably, this proposal was not debated or approved by Parliament and hence there is still no mandatory regulation of the nutritional quality of the food and beverages sold in vending machines in Italy.

Yet there is an alternative solution that could be adopted until mandatory regulation is enforced: to introduce a clause in all new tenders for vending machines, which states that the successful supplier is required to include ‘healthier’ foods alongside the traditional selection of food and beverages. This would make it easier for children to make healthier choices, while still respecting their personal preferences. In terms of the contractual obligations regarding the nutritional quality of the food marketed in vending machines, it would be sufficient for public administrations and schools to review the contractual relationship with all vendors providing food delivery services on school premises or to public offices (bars, vending machines and authorized retailers), so that at least 50% of the products sold are medium-to-small portion size, low in saturated fat (and do not contain trans fats), low-salt, low-calorie, and have no added sugar. In practice, this would entail including, for example, mineral water, unsweetened tea, low-fat milk, low fat yogurt, low fat drinking yogurt, natural fruit juices, crispbread and crackers with no saturated fat and trans fatty acids, crisps and vegetable chips that have not been fried, dried fruit and nuts (30 g packet), low-calorie fitness bars (less than 80-90 kcal), with zero cost increase to the retailer. Moreover, the optimal solution of also including fresh fruit can be adopted in vending machines with a cooling system to by-pass the problem of perishability. With this system, we are also able to include healthy sandwiches filled with salad and/or tomato

and boiled ham without fat, salad and/or tomato and low-fat cheese, salad and/or tomato and turkey, tomato and tuna.

This simple, technically and commercially feasible strategy, called *Una macchinetta per amica* (A vending machine for a friend), was developed at the Rome headquarters of the National Research Council of Italy (CNR) with the support of Italian Society for Cardiovascular Prevention (SIPREC) and *Gestione Servizi Integrati*, the catering firm that has become CNR’s partner in supporting the goal of promoting healthy snacking in the workplace. Within 1 year, the ‘healthier’ vending machines, placed alongside the traditional ones, accounted for 41% of all vending machine sales.

The next step was to take this strategy one step further and apply it to vending machines that dispense drinks and snacks in other public workplaces and, above all, in schools. To achieve the goal of preventing and reducing overweight and obesity in children (and adults), in addition to requiring vendors to introduce a ‘healthier’ vending machine, we have been working alongside teachers, to provide support in educating students (and their parents) on the principles of healthy eating and, in more general terms, of a healthy lifestyle. Clearly the initiative needs has been reinforced through presentations, information sharing and training by nutrition (and healthy lifestyle) experts, in schools. The idea is to transform vending machines into a resource that actively promotes healthy eating because of the snacks on offer, so that they become a tool in an integrated nutrition education project.

There are multiple benefits to this strategy. Educating children and raising their awareness will help transfer the message to their parents and, in future, will help these children live healthy lifestyles when they become adults [10]. Engaging with teachers to strengthen their professional knowledge and communication skills is fundamental in securing their support as allies in preventing and reducing overweight and obesity in children. Clearly, the increase in overweight and obesity is not simply about children or families making ‘bad choices’—it is far more complex and may also depend on factors including the education and training each child or adolescent receives.

This is the aim of the project ‘A vending machine for a friend: a way to encourage healthier choices at school and reduce overweight’ funded by the European Heart Network (EHN), that the Italian Society for Cardiovascular Prevention (SIPREC) and the Lithuanian Heart Association (LHA) are rolling out respectively, as a pilot project, in Rome, Latina and Priverno, in Italy, and in Vilnius and Panezevys, in Lithuania (Fig. 1).

As Vytenis Andriukaitis, former European Commissioner for Health and Food Safety said, “We wish our children happiness, health and success. As adults we are responsible for making choices that prevent overweight and obesity in our kids. They deserve our strong commitment and action.



Fig. 1 The logo of the project “Una macchinetta per amica” (A vending machine for a friend)

Let’s break the childhood obesity vicious cycle together and now.” The global increase in obesity among children is not an unstoppable trend. The goal of creating a healthy nutritional environment for children in schools, to help prevent overweight and obesity, is a real possibility. ‘Healthy’ vending machines provide smart nutritional choices while promoting healthy eating habits. It is an approach we can work on here and now, and one that can be adopted by any country without major financial investment. In fact, it can generate social and economic benefits, and our societies will be healthier as a result. At the end of the day, it is an issue of health equity: there is no reason why people with lower education and income should continue to be exposed to unhealthy foods more than those with higher levels of education and income.

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Compliance with Ethical Standards

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Conflict of interest The corresponding author states there is no conflict of interest.

Ethical approval and Informed consent Not required for this type of study.

References

1. United Nations Convention on the Rights of The Child. In: Adopted by the United Nations General Assembly, New York, on 20 November 1989; 1989.
2. <https://www.weforum.org/agenda/2020/01/obesity-crisis-how-we-can-help-children-to-eat-better> (2020). Accessed 30 Mar 2020.
3. Kern DM, Auchincloss AH, Steher MF, Diez AV, Moore LV, Kanter GP, et al. Neighborhood prices of healthier and unhealthy foods and associations with diet quality: evidence from the multi-ethnic study of atherosclerosis. *Int J Environ Res Public Health*. 2017;14:1394. <https://doi.org/10.3390/ijerph14111394> (Published online 2017 Nov 16).
4. Wilkins E, Wilson L, Wickramasinghe K, Bhatnagar P, Leal J, Luengo-Fernandez R, et al. In: *European Cardiovascular Disease Statistics, 2017*. Brussels, Belgium: Logstrup S, European Heart Network. 2017; pp. 1–188.
5. Raleigh VS. Trends in life expectancy in EU and other OECD countries: why Are Improvements Slowing? *OECD Health Work Paper*. 2019;2019:108. <https://doi.org/10.1787/223159ab-en>.
6. Swinburn BA, Sacks G, Hall KD, McPherson K, Finegood DT, Moodie MK, et al. The global obesity pandemic: shaped by global drivers and local environments. *The Lancet*. 2011;378:804–14.
7. Cairns G, Angus K, Hastings G, Caraher M. Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. *Appetite*. 2013;62:209–15. https://ec.europa.eu/jrc/sites/jrcsh/files/jrc-school-food-policy-factsheet-england_en.pdf (2020). Accessed 8 Apr 2020.
8. http://documenti.camera.it/_dati/leg17/lavori/stampati/pdf/17PDL0042480.pdf (2020). Accessed 30 Mar 2020.
10. Marathe PH, Gao HX, Close KL. American diabetes association standards of medical care in diabetes. *J Diabetes*. 2017;9:320–4.