

Australian school canteens: menu guideline adherence or avoidance?

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Abstract

Issue addressed: Since 2005, all states and territories across Australia have progressively introduced policy guidelines to promote nutritious food sales in school canteens. This study aimed to assess the compliance of school canteens with their state or territory canteen guidelines.

Methods: School canteen menus from a convenience sample of online government school websites were assessed for compliance with guidelines for the inclusion of foods meeting the criteria for 'red' ('not recommended' or 'only occasional – no more than twice per term'), 'amber' ('select carefully') and 'green' ('always on the menu', 'everyday', 'fill the menu' or 'plenty'). The costs of a salad and a regular pie were also collected where present.

Results: A total of 263 school menus were sourced and assessed (4% of government schools). Western Australia was the most compliant, with 62% of menus adhering to the state guidelines; compliance in other jurisdictions ranged from 5–35%. Compared with primary schools, a higher proportion of secondary schools offered 'red' items on the menu ($P < 0.05$). The mean cost of a regular pie (A\$3.17 ± 0.51) was significantly cheaper than the cost of a salad (A\$4.25 ± 0.82) ($P < 0.001$). A range of discretionary food items were present on a large proportion of menus.

Conclusion: This study found that the majority of school canteens were not complying with relevant state or territory guidelines, particularly those schools in which no monitoring or enforcement of the guidelines was conducted.

So what? Monitoring and enforcement by those responsible for the policy, together with efforts to build the capacity for schools and manufacturers to improve the food supply, may increase compliance.

Key words: menu guidelines, nutrition, school canteen.

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Introduction

Childhood overweight and obesity is a complex problem that requires multifaceted solutions. It is widely acknowledged that overconsumption of energy-dense, nutrient-poor (EDNP) foods plays a significant role in the development of childhood obesity,^{1,2} displaces healthy food choices and can lead to poorer micronutrient intakes.³ There are a range of settings in which children are exposed to environments that offer easy access to EDNP foods. This includes the school setting, where they consume over one-third of their daily energy intake.⁴ Schools have continuous and

intensive contact with children and the opportunity to promote healthy behaviours.^{5,6} A crucial component of the school setting is the school canteen. In Australia, the majority of schools offer a school food service, either a canteen or 'tuckshop' onsite or an offsite food delivery service.⁷ Canteens have an impact on children's consumption,⁸ with evidence suggesting they contribute to the high intake of EDNP foods.^{4,9} A recent systematic review of the literature suggests that improving the food offered in school food service systems is needed as a strategy for reducing childhood obesity.²

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State and territory governments in Australia have acknowledged the impact of school canteens, and developed policies and guidelines to inform the composition of menus so that healthier food choices will be available and exposure to EDNP foods limited. At the time of this study, all states and territories (with the exception of the Northern Territory (NT)) use the traffic light system of food categorisation in school canteens. This system is reflective of the food classification, principles and evidence statements in the Australian Dietary Guidelines,¹⁰ and involves colour codes, where 'red' indicates 'not recommended' or 'only occasional – no more than twice per term', 'amber' indicates 'select carefully', and 'green' indicates 'always on the menu', 'everyday', 'fill the menu' or 'plenty'. In addition, for most states and territories, confectionery and high-sugar soft drinks are banned items. Each state and territory has similar guidelines and policies, for example 'red' foods not being available on the menu more than twice per term, but there are different approaches to their implementation. There has been limited monitoring of compliance and/or satisfaction with the guidelines since their implementation. Of the work that has been completed, results are mixed. While parents, teachers, and canteen managers report acceptance of the traffic light system,¹¹ few schools are compliant with it.⁷ Despite this, it appears that providing schools with support to change their healthy eating environment can result in positive change.⁵ For schools to play a role in addressing childhood obesity, as part of a community and school-wide approach, their canteens need to follow policy guidelines.

This study aimed to assess the compliance of Australian school canteens with relevant state or territory canteen guidelines and policy.

Methods

This study employed a cross-sectional examination of online school canteen menus conducted between June and August 2012. All government-funded primary and secondary schools with online school canteen menus were eligible for inclusion in the study (estimated total government schools 6743, from 2010 ABS data).¹² Catholic, independent and private schools were excluded from the study, as these schools are not required to adhere to state and territory guidelines. Using a listing of all government schools in each state, obtained from the relevant Education Department website, all schools were searched online to determine if they had an online canteen menu, and where this was available it was downloaded for further analysis. A convenience sample of government-funded primary and secondary schools in metropolitan and rural settings around Australia who had their menus displayed on the web were collected. Menus ranged from all-year round to summer and/or winter menus, and the canteens operated at least 1 day per week. The methodology for determining compliance was adapted from a previous study.⁷ Menus were assessed for compliance with individual

state and territory canteen guidelines by a final year dietetics student (AB). For each menu, the total number of menu items was recorded. Where items were only available on 1 day of the week, they were included in the total count. Using the specific state or territory criteria, the number of red ('not recommended' or 'only occasional - no more than twice per term'), amber ('select carefully') and green ('everyday') and banned items on each canteen menu was recorded. As cost is a major influence of food choice,¹³ the presence and cost of a meat pie (regular sized pie) and the cheapest salad option on the menu (not a side salad but a main meal option, such as cheese salad or chicken salad) was also documented to determine any difference in the cost of green and red foods. These items were chosen as they commonly appear on menus and reflect the green and red food criteria clearly. Meals and combined foods (e.g. sandwich with fillings) were coded by estimating the nutritional composition of the individual items in these foods (using standard foods in FoodWorks 7)¹⁴ and making an assessment based on this and the specified criteria in each state or territory guidelines. Each different type of sandwich available was counted as a separate menu item. If pies were only available one day per week, they were still classified as having a pie on the menu. The presence or absence of any fresh fruit, soft drink, pastries, chocolate and other confectionery, crisps, cakes and biscuits, and ice creams on the menu was also recorded.

Data analysis included calculation of the ratios of 'green', 'amber', 'red' and banned items for each menu. Overall menu compliance was determined based on the proportion of 'green' items on the menu, where a minimum of 60% 'green' foods was deemed compliant for Western Australia (WA) and the NT (based on the stated policy) and 50% 'green' foods was deemed compliant for all other states. Compliance also required canteen menus to have 'red' items on the menu on no more than two occasions per term (if this was the stated policy or guidelines) and/or to not have any banned food or drink items, as defined by the policy/guidelines.

Data were analysed using SPSS 20 (SPSS Inc., Chicago, SPSS for Windows, version 20) and assessed to be non-parametrically distributed, except for the costs of pies and salads. The median numbers of menu items and subcategories were calculated, and ranges have been reported. The Mann-Whitney U Test was used to compare the proportion of 'red' items on menus between primary and secondary schools. Chi-square was used to compare the proportion of banned items with the presence of fresh fruit by school type, and to compare compliance across states and territories. A *t*-test was used to compare the cost of a pie with that of a salad. Statistical significance was deemed to be $P < 0.05$.

Results

A total of 263 school menus were sourced and assessed, representing ~4% of government schools across Australia. Of these, 158 were metropolitan schools and 105 were based in a rural area; 184 schools

were primary schools and 79 were secondary schools, which is consistent with the distribution of government schools throughout Australia.¹²

Across all schools, the total number of menu items ranged from 19 to 112 (median 54), with the range of ‘green’, ‘amber’ and ‘red’ items being 7–64 (median 25), 5–64 (median 26), and 0–29 (median 1), respectively. Fig. 1 illustrates the ratio of ‘red’, ‘amber’ and ‘green’ items on the menu by state or territory and shows greater proportions of ‘green’ items in WA and the NT.

When analysed by school type, a higher proportion of secondary schools was found to offer ‘red’ items on the menu ($P < 0.05$) (data not shown). For banned items, there was no statistically significant difference between primary and secondary schools ($P = 0.27$). Of the states analysed, WA was the most compliant, with 62% of menus adhering to the state canteen policy and guidelines (Fig. 2) ($P < 0.001$). The Australian Capital Territory (ACT) had the lowest percentage

of schools complying. There was no difference between states or territories for compliance with respect to the recommended percentage of ‘green’ items or ‘red’ items being present more than twice per term.

A range of discretionary food¹⁰ items were present in a large proportion of menus (Table 1). Pastries were most commonly present, existing on 86–100% of menus, followed by cakes and biscuits, and ice creams. Although banned, a small percentage of primary schools in three states and territories offered soft drinks (less than 10%), and from 13–67% of secondary schools sold soft drink. This difference was statistically significant ($P < 0.001$). Likewise, confectionery was present on the majority of menus across states and territories, except in WA (where it was not sold at either primary or secondary schools) and in secondary schools in Victoria (Vic) and South Australia (SA). From 6–40% of schools offered all discretionary items on the menu assessed for this study, with only WA primary and secondary schools having menus that did not offer all discretionary items on the one menu. Fresh fruit was available on 80% of school menus, and in this aspect there was no difference between primary and secondary schools ($P = 0.3$).

In all states and territories (and overall), the mean cost of a pie was significantly cheaper than the mean cost of the cheapest salad. (Table 2).

Discussion

Improving the quality of food sold at school canteens is part of a multistrategic approach to reducing the burden of overweight and obesity in children. This cross-sectional study of a convenience sample of Australian school canteen menus assessed compliance with relevant state or territory canteen guidelines and policy. It also identified the range of products being sold on school canteen menus across Australia. It found that the majority of menus were not compliant and that a large variety of discretionary items were available across the menus, including banned products. It also found that there was a significant cost differential between a healthy and a discretionary food choice.

To the authors’ knowledge, this is the first Australia-wide study that has attempted to quantify compliance with state- or territory-based school canteen guidelines and policy. Its findings are somewhat consistent with another Victorian study, which found that despite the introduction of Guidelines in 2006, 37% of surveyed school canteens still sold banned food items, and only 20% of the menus complied with the guideline to offer predominantly ‘green’ foods by 2009.⁷ Similarly, our study (conducted in 2012) found that, on average, ‘green’ items made up 42% of Victorian school canteen menus and ‘red’ items 3%, with only 16% of menus being assessed as compliant. The Victorian study found a similar difference between primary and secondary schools to that found in our study.⁷ A small compliance audit of four schools in New South Wales (NSW) found that ‘green’ items made up 30–41% of menu items, that ‘amber’

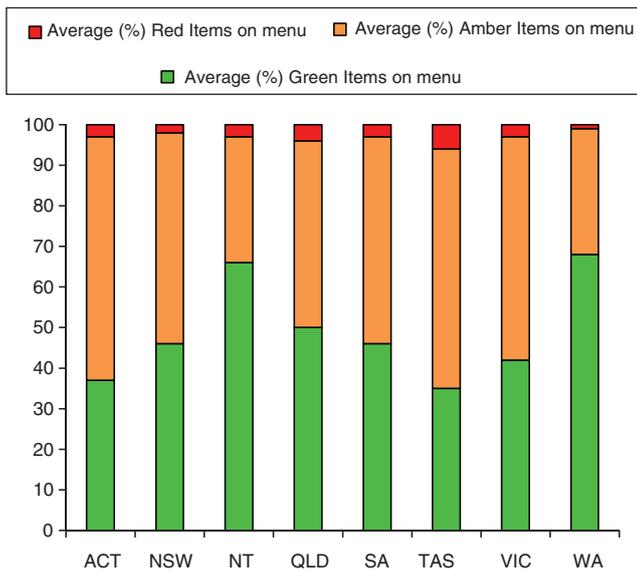


Fig. 1. Proportion of ‘red’, ‘amber’ and ‘green’ items on school menus by state or territory.

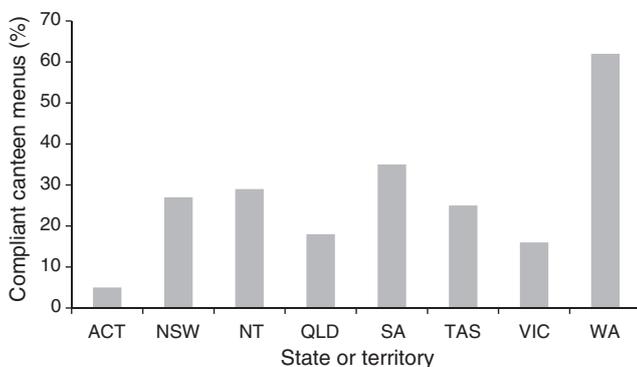


Fig. 2. Percentage of school canteen menus in each state and territory that complied with guidelines and policy.

Table 1. Percentage of school menus offering selected discretionary items, by school type, in each state and territory

	ACT n = 19		NSW n = 60		NT n = 14		QLD n = 38		SA n = 31		Tas. n = 8		Vic. n = 51		WA n = 42	
	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary	Primary	Secondary
Total number of schools	14	5	39	21	14	n/a	16	22	23	8	5	3	36	15	31	11
Ice creams and ice confections	86	80	92	81	86	n/a	63	91	96	50	100	100	86	40	84	82
Cakes and biscuits	86	100	87	90	64	n/a	82	82	91	100	80	100	83	87	58	73
Crisps	50	80	87	71	36	n/a	63	64	70	63	40	67	28	53	23	36
Chocolate and other confectionery	50	40	28	33	21	n/a	6	14	17	0	40	33	22	0	0	0
Pastries	100	100	97	95	100	n/a	88	86	100	100	100	100	94	93	97	100
Soft drink	7	40	0	43*	0	n/a	38#	9	0	13	0	33	6	67*	0	36#
All of the above, excluding soft drink	29	20	20	29	14	n/a	6	9	13	0	40	33	8	0	0	0

*P<0.001. #P<0.05.

foods predominated, and once again that secondary schools offered more ‘red’ items than primary schools.¹⁵

In most states and territories, the nutrition policy for school canteens is supported by Health and/or Education Department guidelines or policy, so it is surprising to find such low levels of compliance. Several studies have investigated the facilitators of and barriers to policy implementation and sustainability in school canteens and other food service operations.^{16–18} Facilitators of policy implementation have included:

- Staff and student readiness to adopt new approaches;
- Education of key partners and stakeholders to build support for proposed changes;
- The use of institutional champions;
- Piggybacking on external influences on change, building momentum for proposed modifications to the food environment; educating end-users (e.g. front-line staff and students) through social marketing and other communication channels to help prepare them for forthcoming changes;
- Providing ongoing, high-quality training and assistance to facilitate the adoption and implementation of recommended practices; and
- Conducting ongoing monitoring and evaluation to support program improvement efforts.¹⁷

Barriers have related mainly to:

- Multiple competing interests, such as parental views and student food preferences;^{15,16}
- Organisational objectives, such as the financial benefit to schools from a canteen operation;^{15,18}
- Complex and time-consuming administrative procedures;¹⁷
- Limited resourcing of policy implementation;¹⁹ and
- Complex nature of the Guidelines.¹⁵

Moore *et al.* concluded that ‘higher level policy interventions may be limited in their effectiveness if they are undermined by a lack of attention to lower level factors that may compromise their successful implementation’ (p. 244).¹⁸

One factor leading to effectiveness and compliance is enforcement.¹⁹ In their application of the RE-AIM framework for assessing policy effectiveness, Jilcot *et al.* found that enforcement was a critical issue relating to policy adoption, implementation, and subsequent impact. They suggest that ‘simply enacting legislation or an organizational policy is unlikely to have much impact if the policy is not enforced’ (p. 111).¹⁹ They recommend well-funded, continuous monitoring and enforcement to ensure continued effectiveness and/or to enable appropriate changes.¹⁹

Of all the states and territories in Australia, WA had the largest percentage of compliant menus. While this cannot be attributed to a particular causal pathway, the major factors thought to be responsible for this level of compliance are the stringent and mandated approach to the requirements (a minimum amount of 60% ‘green’ items and the banning of ‘red’ items completely)¹⁶ and

Table 2. State and territory comparison of the cost of pie and salad across school canteen menus

	ACT n = 19	NSW n = 60	NT n = 14	QLD n = 38	SA n = 31	Tas. n = 8	Vic. n = 51	WA n = 42	Overall
Mean cost of pie (A\$)	3.35	3.05	3.45	3.15	3.35	2.67	3.13	3.21	3.17 ± 0.51
Mean cost of salad (A\$)	3.96*	4.10*	5.00*	4.06*	4.50*	3.53 [#]	4.45*	4.15*	4.25 ± 0.82*

* $P < 0.001$. [#] $P = 0.004$.

the requirement for school principals to perform a mandatory assessment of their school canteen menu each year and submit this to the relevant government department. Only two other states had any sort of monitoring in place (NSW and Queensland (QLD)), but this was voluntary, using self-assessment tools. Compliance may be greater where reporting is part of the policy or guideline system. There is a need to conduct an intervention study to investigate which strategies are most effective at supporting compliance, with a representative sample of school canteen menus chosen from across the country so findings can be generalised.

Despite guidelines encouraging school canteens to 'fill the menu' with 'green foods', and to 'choose carefully' and 'don't dominate the menu' with 'amber' foods, only three states or territories offered 50% or more 'green' items, while the remainder offered predominantly 'amber' items. Interestingly, Innes Hughes *et al.*, in their assessment of foods available through the NSW School Canteen Association, found that only 35% of 855 registered items were 'green', with the remaining 65% classified as 'amber'.²⁰ Given that children obtain nearly 41% of their kilojoules from these types of foods,³ it is not ideal that they are so dominant in school canteen menus. Innes Hughes *et al.* also noted that many of the foods classified as 'amber' only met the nutritional criteria because they were reformulated versions of regular foods or because they were regular foods offered in smaller serving sizes. The predominance of these foods on the menus is concerning in that it may signal tacit endorsement of these foods and give the impression that they are healthy choices, even when in their regular form and/or in larger serve sizes. The Australian Guide to Healthy Eating²¹ provides guidance on consumption of these discretionary-type foods and does not make distinctions between 'better' or 'worse' pastries, cakes, confectionery, ice creams, etc. In their regular form and serving size, the majority of these foods would be classified as 'red', so to some extent having such a preponderance of these foods designated as 'amber' on school menus sends the wrong message to children, particularly when 'green' items contribute less than 50% of the menu.

The cost differential between unhealthy and healthy food items on canteen menus is of concern. The cost of food is a major determinant of nutritional intake and health.¹³ Good evidence exists that increasing the cost of unhealthy foods has been associated with reduction in intakes and subsequent reduction in weight.^{22,23} This study suggests that school canteens need to consider pricing policy and strategies to subsidize or reduce the

cost of healthy menu items to promote their consumption. There is evidence to suggest this will be effective in children, with studies reporting cost and taste as major influences on children's purchases at school canteens.⁹

This study is limited in that it reports only data from schools with online menus, with restricted ability to assess frequency. (As menus were assessed at one point in time only, it is unknown whether these menus were offered at all times over the school year.) Its cross-sectional nature prevents us from identifying any change or improvements in school canteens menus since the introduction of state-based policy. The convenience sample of government schools (4%) may not be an adequate representation of schools more broadly. The healthfulness of canteen menus of private and Catholic schools is unknown. Further intervention research with a generalisable sample is needed to investigate which strategies are most effective at supporting compliance.

Conclusion

Within this sample of school menus in Australia, this study has found high levels of non-compliance of school canteens with policy guidance, with compliance being related to the level of monitoring and enforcement. It therefore likely suggests that, in order to improve compliance of school canteens, an Australia-wide, consistent and coordinated system of monitoring and enforcement needs to be implemented. Additionally, following good practice guidance, there is a need to build the capacity of schools, canteen managers and suppliers to make innovative responses to the guidelines: in particular, including more 'green' items and limiting 'amber', 'red' and banned foods; using pricing strategies to promote the purchase of healthy menu items; and providing incentives for manufacturers to create more foods that fulfil the 'green' criteria.

References

1. Covic T, Roufeil L, Dziurawiec S. Community beliefs about childhood obesity: its causes, consequences and potential solutions. *J Public Health (Oxf)* 2007; **29**: 123–31. doi:10.1093/pubmed/fdm023
2. Waters E, de Silva-Sanigorski A, Brurford B, Brown T, Campbell KJ, Gao Y, *et al.* Interventions for preventing obesity in children. *Cochrane Database Syst Rev* 2011; **12**. doi:10.1002/14651858.CD001871.pub3
3. Rangan A, Schindeler S, Hector D, Gill T, Webb K. Consumption of 'extra' foods by Australian adults: types, quantities and contribution to energy and nutrient intake. *Eur J Clin Nutr* 2009; **63**: 865–71. doi:10.1038/ejcn.2008.51
4. Bell A, Swinburn B. What are the key food groups to target for preventing obesity and improving nutrition in schools? *Eur J Clin Nutr* 2004; **58**: 258–63. doi:10.1038/sj.ejcn.1601775

5. Rana L, Alvaro R. Applying a Health Promoting Schools approach to nutrition interventions in schools: key factors for success. *Health Promot J Austr* 2010; **21**: 106–13.
6. Brady S, Bell A, Swinburn B, St Leger L, Catford J. Evaluation of quality practice in the promotion of healthy eating and physical activity in Australian schools. Melbourne, Australia: Deakin University; 2003.
7. Silva-Sanigorski A, Breheny T, Jones L, Lacy K, Kremer P, Carpenter L, et al. Government food service policies and guidelines do not create healthy school canteens. *Aust N Z J Public Health* 2011; **35**: 117–21. doi:10.1111/j.1753-6405.2010.00694.x
8. Cleland V, Worsley A, Crawford D. What are Grade 5 and 6 children buying from school canteens and what do parents and teachers think about it? *Nutr Diet* 2004; **61**: 145–50.
9. Finch M, Sutherland R, Harrison M, Collins C. Canteen purchasing practices of Year 1–6 primary school children and association with SES and weight status. *Aust N Z J Public Health* 2006; **30**: 247–51. doi:10.1111/j.1467-842X.2006.tb00865.x
10. National Health and Medical Research Council. Eat for health. Australian dietary guidelines summary. Canberra: Australian Government, Department of Health and Ageing; 2013. Available from: http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55a_australian_dietary_guidelines_summary_131014.pdf [Verified 17 November 2013].
11. Pettigrew S, Pescud M, Donovan R. Traffic light food labelling in schools and beyond. *Health Educ J* 2012; **71**: 746–53. doi:10.1177/0017896911424659
12. Australian Bureau of Statistics. Australian schools 2010. Canberra: Australian Bureau of Statistics; 2011.
13. Lee A, Mhurchu C, Sacks G, Swinburn B, Snowdon W, Vandevijvere S, et al. Monitoring the price and affordability of foods and diets globally. *Obes Rev* 2013; **14**: 82–95.
14. Xyris. *FoodWorks 7*. Kenmore Hills, Queensland: Xyris Software (Australia) Pty Ltd; 2012.
15. Ardzejewska K, Tadros R, Baxter D. A descriptive study on the barriers and facilitators to implementation of the NSW (Australia) Healthy School Canteen Strategy. *Health Educ J* 2013; **72**: 136–45. doi:10.1177/0017896912437288
16. Pettigrew S, Donovan R, Jalleh G, Pescud M, Cowie S. Addressing childhood obesity through school canteens. Report to the WA Department of Education and Training. Perth, Western Australia: The University of Western Australia and the Centre for Behavioural Research in Cancer Control, Curtin University; 2009.
17. Robles B, Wood M, Kimmons J, Kuo T. Comparison of nutrition standards and other recommended procurement practices for improving institutional food offerings in Los Angeles county, 2010–2012. *Adv Nutr* 2013; **4**: 191–202. doi:10.3945/an.112.003285
18. Moore S, Murphy S, Tapper K, Moore L. From policy to plate: barriers to implementing healthy eating policies in primary schools in Wales. *Health Policy* 2010; **94**: 239–45. doi:10.1016/j.healthpol.2009.10.001
19. Jilcott S, Ammerman A, Sommers J, Glasgow R. Applying the RE-AIM framework to assess the public health impact of policy change. *Ann Behav Med* 2007; **34**: 105–14. doi:10.1007/BF02872666
20. Innes-Hughes C, Hebden L, King L, Grunseit A, Bolger G. Green and amber foods: the nutritional content of food and beverages registered for sale in New South Wales school canteens with Healthy Kids Association. *Nutr Diet* 2012; **69**: 111–8. doi:10.1111/j.1747-0080.2012.01580.x
21. National Health and Medical Research Council. Australian guide to healthy eating. Canberra: Australian Government, Department of Health and Ageing; 2013. Available from: http://www.nhmrc.gov.au/_files_nhmrc/publications/attachments/n55i_australian_guide_to_healthy_eating.pdf [Verified 29 January 2014].
22. Mhurchu C, Blakely T, Jiang Y, Eyles H, Rodgers A. Effects of price discounts and tailored nutrition education on supermarket purchases: a randomized controlled trial. *Am J Clin Nutr* 2010; **91**: 736–47. doi:10.3945/ajcn.2009.28742
23. Lee J, Ralston R, Truby H. Influence of food cost on diet quality and risk factors for chronic disease: a systematic review. *Nutr Diet* 2011; **68**: 248–61. doi:10.1111/j.1747-0080.2011.01554.x