EATING (WELL) AT SCHOOL

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Introduction

School lunches generate a lot of debate all over the world. Whether it consists of a packed lunch brought from home or a communal lunch provided at school, controversy seems to exist. Countries like the UK and the USA have provided lunch to students for years.

Fig 1 & 2. In some countries children eat lunch at school; in others they bring a packed lunch from home.

These are funded by the government and usually produced on site. Much criticism has been made of the nutritional quality of these meals, as keeping costs down is usually the primary aim with nutrition and taste a poor second. Even television series have been made about this. (Check out Jamie’s School Dinners, Jamie Oliver’s Food Revolution and a discussion of school lunches, nutrition and the effect of lobbyists in this article http://highline.huffingtonpost.com/articles/en/school-lunch/)

In countries like Australia and New Zealand most children either bring a packed lunch from home or perhaps access the school canteen and buy food. Both packed lunches and school canteen menus are often criticised not only for the nutritional quality but also the environmental impact. To address this though, we need to understand the barriers to healthy, environmentally friendly school lunches.

Why is it important?

Children spend about half of their waking time at school, so food eaten here has a significant impact on their health. They consume about 1/3 of their total energy intake during the school day. About a quarter of Australian school children are currently overweight or obese and it is estimated this will increase to about one third by 2025 with a subsequent increase in incidence of chronic diseases like heart diseases and diabetes. Childhood eating habits are known to lead to adult eating habits so establishing healthy eating patterns during these early years will be beneficial in the long term. Additionally, students with better health behaviours such as good nutrition and physical activity have better learning outcomes and better behaviour.

The Australian National Health Survey reports that most children in Australia do not meet the recommended amounts of fruit and vegetables each day and eat more discretionary foods than is recommended.

In 2014-15, 68.1% of children aged 2-18 years met the guidelines for recommended daily serves of fruit, while 5.4% met the guidelines for serves of vegetables. Only one in twenty (5.1%) children met both guidelines.

Girls were more likely than boys to meet recommended intakes for fruit (71.8% compared with 65.0%), but the proportions of girls and boys meeting recommended intakes for vegetables were similar (6.3% and 4.3% respectively).

On average, children aged 2-18 years consumed 2 serves of fruit and 1.9 serves of vegetables each day in 2014. - From the Australian National Health Survey.

Discretionary foods are those “foods and drinks not necessary to provide the nutrients the body needs, but that may add variety. However, many of these are
high in saturated fats, sugars, salt and/or alcohol, and are therefore described as energy dense. They can be included sometimes in small amounts by those who are physically active but are not a necessary part of the diet.”

Most Australian school aged children average about 35% of total food intake from discretionary foods and 41% for teenagers in the 14 to 18-year age group. The high intake of these types of foods and relatively low intake of fruits and vegetables is having an impact on the health of school children.

Surveys report that children frequently have discretionary foods like packaged snacks, sweet fillings in sandwiches, chips and juice boxes in their packed lunch and fewer of the fruits and vegetables that are recommended. Even health-conscious families can find it difficult to resist the persuasive marketing of these types of foods. Foods that should be occasional treats – high in calories and low in essential nutrients - have become foods that are consumed daily.

What should a good lunch look like?

This table shows how many serves of each of the key food groups is recommended for each age group. Adapted from the “Australian Dietary Guidelines”

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<th>Boys 4-8</th>
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<td>Additional serves*</td>
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*more active, taller or older

With most children consuming lunch and a snack at school it is important to ensure the lunch includes foods from the key food groups. This might mean 1 or 2 serves of wholegrains (e.g. wholemeal bread or roll, wrap, crispbreads or cold pasta) as these provide energy, fibre and B vitamins. Aiming to include at least one serve of vegetables as salad in the sandwich or roll or vegetable sticks for a snack means getting closer to the recommended daily intake. Including some protein, such as chicken, egg, meat, beans or leftovers from the night before as part of the meal and some dairy (cheese is easy!) will finish off a nicely balanced meal. There is no need to focus on foods that are heavily promoted as ‘Super foods’, generally ordinary fruits and vegetables are just as super, cheaper and more likely to be eaten.

Fig 3. A healthy school lunch includes food prepared at home from each of the food groups – make sure to keep it cold, in a thermal bag with ice or in a school fridge.

Pre-packaged snacks foods, if included occasionally, need careful label reading. Many contain large amounts of fat and sugar; better options are those with less than 600kj per serve, less than 10g of sugar per 100g and 5g or less of fat per 100g of the food.

Packing a great lunch box is a good start. However, many school children do not eat everything that is sent to school. This might be because they don’t like the food, they are not hungry, or they might prefer to play or do something else. Children getting involved in the planning and preparation might lessen the chances of sending less preferred foods. Some schools encourage younger children to sit for 10 minutes at the beginning of lunch to eat their lunch, but some items are slow to eat or even difficult to negotiate… getting the cling film off a salad wrap or peeling a mandarin for instance. This needs to be considered in the food preparation.

Making the ideal lunch also means keeping it safe for consumption. In Australia many schools keep bags outside the classroom and the summer heat can easily cause spoilage of food. Lunchboxes containing leftovers or cold meats are most at risk of being unsafe to eat at room temperature. An ice brick or frozen water bottle is the simplest way to prevent bacteria multiplying in food during the morning and keeping food palatable. A NSW Food Authority study showed only about one third of students had an ice brick in their lunchbox and found the temperature of the food increased by 12 degrees between preparation at 8am and consumption at 1pm if there was no ice brick, with a consequent 14 time increase in bacterial count.

An additional safety aspect is that of food allergy. One in every twenty children has allergies, and reactions to food can be fatal. Carers and children are taught to read labels to avoid allergens and some schools have policies such as “no nuts” in place. The Australian Society for
Clinical Immunology and Allergy recommends a range of strategies to reduce risk of setting off potentially serious food reactions) that include not giving food rewards, discouraging food swapping and being careful of litter.


Influences on children’s food intakes

The main influence on children’s diets of course is family; however, as children get older a range of other factors, including education, policies, exposure to new tastes, role models and advertising, will impact on food choices and preferences. The changing nature of advertising with very specific and targeted messages via social media platforms makes action to prevent obesity and overweight difficult. A range of video games, viral adds and apps with brand details embedded in them are directed at children with the aim of getting them to eat particular foods and drinks, usually discretionary foods.

Children’s sport is not immune. Big food corporations provide relatively inexpensive sponsorship of sporting clubs or activities to build a “customer relationship” with children and associate food and drinks with activities they enjoy. The Obesity Coalition, a Victorian group that aims to reduce overweight and obesity, has some excellent policy documents in relation to the topics of advertising and marketing to children: http://www.opc.org.au/action-areas/advertising-marketing.aspx

School Canteen guidelines have been implemented around Australia that ban the sale of confectionary and soft drink and have a ‘traffic light’ classification to encourage consumption of more (green light) foods from the five food groups: fruit, vegetables, wholegrain, high fibre breads and cereals, reduced fat dairy products and eggs, fish, chicken, beans or meat. Although these policies have been in place for over ten years many schools still debate the value of this change. Arguments include reduced profitability due to lower sales, increased time for preparation of fresh foods, and the reduced choice or “nanny state” associated with this change.

Children who access the canteen once a term may indeed be able to consume the treats or discretionary foods traditionally sold in the canteen. But for those who utilise it daily or weekly, providing a healthy environment and food education and making healthy choices easy choices will impact on long term preferences for healthy foods. Schools often develop school canteen or food at school policies to reflect their support of these strategies.

Many schools take part in education programs like the “Stephanie Alexander Kitchen Garden Program” where children learn to grow, harvest, prepare and share fresh seasonal food. Other schools sign up as Health Promoting schools via organisations like the Victorian Healthy Eating Enterprise which covers a range of initiatives including advice services, achievement programs and policy.

Evaluations of these programs suggest they are able to make small shifts in improving food intake of some children. However, the biggest gains in improving children’s health can be made with broader changes such as regulating the advertising of junk foods, reducing the intake of sugar sweetened beverages and working to improve both diet and activity practices.

The unhealthy food environment society is exposed to has a significant and profound long-term influence on the entire food system and hence family and individual food choices.

“Today’s food environments exploit people’s biological, psychological, social, and economic vulnerabilities, making it easier for them to eat unhealthy foods. This reinforces preferences and demands for foods of poor nutritional quality, furthering the unhealthy food environments. Regulatory actions from governments and increased efforts from industry and civil society will be necessary to break these vicious cycles” Lancet 2015

Some of the proposed changes include:

- Providing a supportive environment for enabling the development of healthy food preferences in early life.
- Removing barriers to healthy food consumption (for instance in poor neighbourhoods or remote areas).
- Influencing food availability (e.g. healthy vending machines, healthy food more accessible).
- Making healthy food affordable; taxing soft drinks.
- Limiting processed food advertising targeted at children.
The critical importance of regulating the food environment to reduce obesity – much in the same way that tobacco companies were targeted to smoking-related deaths - is now emphasised by leading experts around the world. The Infographic “How can governments support health food preferences” shows some of the key points in policy direction.

Source: http://www.thelancet.com/infographics/obesity-food-policy
Environmental sustainability

Time is often listed as a reason why people buy pre-prepared snack food (like fruit straps or muesli bars, chips, desserts or juice), because dropping them into the lunch box is quicker than chopping up fresh food. Many foods marketed to children and parents are advertised as being ideal for school lunches but when we consider the amount of packaging associated with the product and both the manufacturing and disposal of the packaging, they are far from ideal.

Consuming fresh foods grown locally and with minimal processing reduces the carbon footprint. Food waste from unconsumed food items is also of concern and many parents report items like fruit going back and forwards to school over many days while teachers report students binning uneaten food. Some schools have implemented “nude food” days when no litter can be produced from the lunchbox.

However, lunches sent from home are sometimes subject to inspection by well-meaning teachers and parents or children may be targeted for having less preferable foods in the lunchbox. For some families being able to send any food is an achievement, let alone consideration of nutrition or environmental impacts of the contents of the lunch box – highlighting the importance of broader regulatory change in the food environment as well as an understanding of the individual factors and a sensitive approach to addressing concerns.

Social aspects

School is usually a social time and the impact of eating with peers can influence food intake in positive or negative ways. Eating together might encourage students to eat new or unfamiliar food items. It is well known that individuals will eat more if they are eating with others rather than if they are alone.

Teenagers might be influenced by their peers regarding the amount of food eaten. The focus on body weight and dieting behaviours may mean some students are influenced to eat less than they want or need to not appear to be different to their peers.

The school setting may also produce an unwanted scrutiny of lunch boxes that causes embarrassment to children who want their packed lunch to be similar to other students. There are many stories of newly arrived immigrants from Europe eating traditional foods like curry or fried rice in their lunch boxes and being teased by other students. Our broadening food culture is perhaps now reducing this recoil from unfamiliar foods.

Student activities:

1. Outline all the factors you can think of that explain children’s food preferences.
2. Why is it important to have a healthy school lunch?
3. What does a healthy school lunchbox look like?
4. Create a weekly menu of healthy recess and school lunches that you would be happy to see in your lunchbox for a fortnight (10 days).
5. Create a menu of healthy (green) school canteen items that would appeal to you.
6. Explore some of the Obesity Coalition proposals and discuss the likelihood of these being adopted in Australia.
7. Discuss some of the aspects of eating together for high school students.
8. Explore whether your school or state currently has school canteen policies, and if so, outline what they are.
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HUNGER GAMES: WHAT MAKES YOU FEEL HUNGRY AND FULL?

Stephanie Osfield, Award winning health journalist

A wide range of lifestyle factors including your food choices, sleep, emotions and dieting can affect the level of hunger you feel. Yet simple lifestyle changes can increase your feelings of fullness and boost your health today and tomorrow.

What drives your appetite?

Two important appetite hormones affect your levels of hunger:

- Ghrelin: This stimulates your appetite. When you have an empty stomach it will send a message to your brain that you are hungry and need to eat.
- Leptin: This dampens down hunger. When you are full your fat cells trigger the release of leptin, which then reduces your appetite.

Certain lifestyle factors can change your levels of these two hormones, increasing your hunger. These include:

- Too little sleep: In particular, getting less than seven to eight hours of shuteye per night can make you hungrier.
- The genes you inherited from your family
- Stress
- Constant noise
- Loneliness
- Cold weather
- What your friends eat – research shows that if your mates eat sweet biscuits you will be more likely to do so too, even when they are not with you.
- How long since you have eaten: It is important to realise that it can take 15 to 20 minutes for your belly (or gut) to signal to your brain that you are full.
- Exercise: Some people find this can make them feel hungrier while others find that exercise suppresses their appetite.

Foods that fill you

Feeling full after a meal helps you feel sated and satisfied. When you don’t have that feeling you may go back for second servings of food or snacks between meals – practices that can increase your risk of weight gain over time.
To reduce hunger and increase your feelings of fullness after a meal, the trick is to choose:

- **Foods packed with fibre**: These take longer to chew and provide a slow release of sustained energy. They include:
  - Wholegrain complex carbohydrates, including rye sourdough bread, oatmeal, brown rice and quinoa.
  - Vegetables and fruits, including carrots, broccoli, potatoes, cabbage, apples and bananas. The fibre in fruit and vegetables is not only good for your digestive system; it also reduces your appetite, while the low kilojoule count means you can eat these foods in abundance without gaining ‘excess’ weight. High fibre foods break down more slowly in your digestive system providing longer lasting energy. They stimulate the hormones that control your appetite, so that your brain and belly send signals between each other to let you know that you are full and don’t need any more food.

- **Protein**: Recent research at the University of Washington School of Medicine has found that increasing protein intake helps people feel full for longer, lose weight and increase their levels of ghrelin, the hunger hormone signals that you feel full. For this reason it is good to include a palmful of protein at every meal by, for example, eating eggs, sardines or tofu at breakfast; tuna at lunch; and fish or chicken at dinner. Legumes such as chickpeas, lentils and kidney beans are also very healthy sources of plant protein. Between meals, good high-protein snacks include low-fat yoghurt, hummus, cottage cheese and nuts.

- **Healthy fats**: Like protein, fats can be very sating (filling). However, it is important to choose healthy fats, which include nut butters, avocado and cold-pressed virgin olive oil. A small handful of nuts can also be very satisfying because they are high in filling natural fats.

- **Foods that add bulk to your meals**: Your belly contains stretch receptors that are triggered as your stomach fills with food. Foods that are bulkier and trigger these receptors more quickly are good choices for making you feel full and reducing your intake of kilojoules. In particular, soups and stews that combine some vegetables, fluid and protein, such as chicken or kidney beans, are healthy, hunger-busting bulky food choices.

- **Low glycaemic carbs**: The glycaemic index (GI) measures how much certain carbohydrates raise your blood glucose levels. Some high GI foods such as white bread, sweet biscuits and rice bubbles cause a sudden spike in your blood glucose levels, which in turn cause your insulin levels to rise. Over time, this can increase your risk of gaining weight or developing Type 2 diabetes. Foods with a low GI include choices such as stoneground wholegrain bread, apples or spinach and they can fill you without causing this spike in insulin and blood glucose.

- **Less processed foods**: Have you ever eaten a large packet of crisps only to feel you were not full and could eat another one? This is because processed, packaged foods are often lower in fibre, so they are less satiating. At the same time they are often higher in ingredients such as sugar, salt and fat.

- **Water between meals**: Your body can easily mistake lack of hydration as a hunger signal when in fact what you really need is a drink of water. So aim to drink up to two litres of water every day.

### Why you feel blissful when eating burgers

Do you love chocolate, crisps and burgers far more than you enjoy vegetables and salads? There’s good evidence to show that certain types of food switch on the reward circuits of our brains – as a result we are more likely to crave those foods. When those reward circuits fire up, the brain releases a chemical called dopamine, which is involved in the sensation of pleasure **and is associated with addiction**.

This food-feel-good connection is not happenstance. We are hardwired and driven to desire energy-rich foods, high in sugar, salt and fat because in the past, they indicated good nutrition, which offered better protection in case of famine. Now food is in plentiful supply, our reward circuits are being triggered more often, causing a cycle of craving for more food and more pleasure, which is leading to weight gain. In fact, just seeing an ad for a chocolate bar or burger can start a salivation process in your mouth, making you feel instantly hungrier and leading you to seek out that pleasure response even though you’re not hungry.

### Can you learn to love lettuce?

At Tufts University, researchers set out to retrain the brains of people to like healthier food. They underwent training called ‘associative conditioning’. This encouraged them to devalue the high kilojoule foods like pizza and ice cream that they had previously craved. This kind of thinking (called ‘cognitive restructuring’) encourages new brain connections to reinforce healthier eating habits as routine and normal. So by the end of the retraining,
the pleasure centres of the brains of the volunteers were being triggered to light up when looking at images of vegetables, salads and whole grains. Meanwhile, they had less of a dopamine release when looking at junk food, treats and snacks, showing a decreased preference for these foods.

Fig 2. Junk food can be addictive, but your brain can be trained to crave healthy food.

Retrain your brain

To retrain your brain to like healthier foods, think about how much they are boosting your health. In addition:

• Brown-bag your lunch: Include salads, whole-grain sandwiches/wraps, homemade soups or leftover portions of stew.

• Downsize your portion: Sure you need that jumbo serving of chocolate forest cake or fries? Studies suggest that our enjoyment of a food lessens a little with each mouthful. In research involving both Stanford and Boston University, students reported significantly more enjoyment of cheese crackers when they ate only three and experienced far less enjoyment, when they ate 15 crackers. Remember this. Eating a little less may actually make your food more enjoyable.

• Switch to healthier ‘treats’: Instead of fizzy soft drink, enjoy some mineral water with a dash of lime. Instead of crisps, enjoy homemade popcorn with a dash of sea salt.

• Minimise take-away and snack foods: Repeated unhealthy fat ‘hits’ cause brain cells to become resistant to appetite-controlling hormones like leptin, shows research from UT South-western Medical Centre in the US. The end result? You no longer get the signal that your stomach is full. The effect lasts about three days, which is why a few fast food feasts on the weekend may leave you feeling ravenous by Monday.

• Avoid dieting and denial: Try this quick test. For the next few seconds, don’t think about chocolate… Tricky isn’t it? This fixation is exactly what happens when you cut out any food – suddenly it’s all you want to eat. People on restricted kilojoule diets experience a bigger brain response to pictures (and anticipation of) snack foods, shows research from the University of Oregon in the US.

Comfort eating

Many of us reach for ‘comfort’ foods that contain sugar, salt and fat, when we are stressed or sad. In fact, people eat more popcorn when they view a sad film, shows research from Cornell University.

Fig 3. Comfort eating is one reason people eat when they are not hungry. Some strategies can help to deal with emotions in better ways.

If your emotions or simply tiredness have been leading you to experience cravings or hunger between meals, here’s what you can do:

• Enjoy non-food highs: Some cravings are all the desire to recreate the feelings we had when we were younger and life felt safer and simple. But there are ways to create similar feelings that don’t involve food. These may include; hugging a friend or relative, listening to uplifting music, going for a power walk or having a good laugh while watching a fun online clip from a favourite comedy. Studies show that all of these kinds of activities can help to increase mood-boosting chemicals in your brain.
• Eat balanced meals: Ensure you are eating that healthy combination of whole grains (e.g., rye bread and brown rice) protein (e.g., meat, dairy and beans) and vegetables (e.g., carrots and broccoli). These foods break down more slowly, providing lasting energy. They also stimulate appetite hormones, which signal to your brain that your belly is full.

• Serve all snacks on a plate: Even when you’re mad or sad. You are less likely to eat a whole packet of rice crackers if you see them served on a plate, which provides a visual reality check or cue to help remind you when a portion size is too big.

• Eat mindfully: Research at Monash University has shown that people who eat more mindfully reduce emotional eating. Mindfulness means more than simply savouring food and giving it your full attention. It also means being mindful of your thoughts and feelings and consciously learning to view them with some distance. This allows you to recognize and interrupt habitual thinking patterns and actions that can lead you to engage in emotional eating (e.g., “This food will make me feel happier”).

• Distract Yourself: Take your mind off your craving with activities to shift your attention, such as calling a friend, walking around the block, drinking a tall glass of water or doing stretches. Cleaning your teeth can be another way to deter non-hungry eating.

• Avoid screens when eating: Experts caution that downing meals or snacks while preoccupied with your computer, mobile phone or television, makes you feel less satisfied by your meal and more likely to snack later. Research from Bristol University tested this theory. They asked some men and women to eat lunch mindfully and others to eat while playing the card game Solitaire on computer. Thirty minutes later, when offered biscuits, those who had eaten their lunch without distractions ate far less.

• ‘Healthify’ take-away meals with home-cooked make-overs: Prepare homemade burgers with wholemeal buns and stacks of salad vegetables. Make fish and chips but grill the fish and bake large potato wedges brushed with olive oil.

• Downsize your utensils: Eating soup from a teaspoon or risotto from a small entrée fork encourages slower eating, so that you feel more full and satisfied after a meal.

• Don’t blow off breakfast: Eat some filling slow-cooked porridge or eggs and dark rye toast.

People who skip breakfast tend to have lower dopamine levels, shows research from the University of Missouri. This may explain why they are also more likely to crave sweet or savoury food later in the day – as they are seeking that pleasurable dopamine release in the brain.

Why dieting makes you hungrier

Slashing your food and kilojoule intake can really mess around with your levels of hunger and fullness and your ability to burn kilojoules.

Why does this happen? Because our bodies are hard-wired to try to hold on to weight, rather than lose it. When you deprive your body of food it:

• Goes into famine mode: Thinking that food is scarce, your body can start to store more fat to help you survive the perceived food shortage.

• Changes your production of appetite hormones: As your body tries to defend its weight, it increases your hunger appetite hormone ghrelin and lowers levels of leptin, the hormone that signals your brain that you are full. So the less you eat the hungrier you become.

These changes explain why many people who go on diets experience ‘rebound weight gain’ where they gain back the weight they lost and often gain a little bit more. One concerning study by the National Institutes of Health tracked six male and eight female contestants from the US Television Show The Biggest Loser. It found that six years after their Biggest Loser diet, the body fat of the contestants had gone back to the same level and their metabolism had slowed by between 1255 and 2090 kilojoules a day (300 to 500 calories), which is a substantial amount.

A better approach to dieting? Rather than drastically cutting your calories, try to eat more fibre-filled and bulky foods (plant foods which have more bulk and nutrition with less calories) so you feel full for longer. This then helps to reduce hunger so that you will experience fewer cravings and have more energy all day. Meanwhile, your body is assured you have enough food so it does not try to hold on to weight or increase your hunger hormones.
Student activities:
1. Write a list of food swaps that people can make to increase their intake of fibre every day.
2. Design a health poster listing five ways in which people can reduce hunger.
3. Take a look at the study about the Biggest Loser contestants. Then write a newspaper report on why diets are bad for your health.
4. Keep a food diary over one day then research which foods contained the most fibre and list them from highest fibre to lowest in fibre.
5. Imagine you are food reviewer. Eat one of your evening meals mindfully, focussing on the texture, taste, smell and flavour of the food. Then write a food review about the meal.
6. In small groups, devise and video a short ad about how to handle emotional food cravings.
7. Research the two appetite hormones, leptin and ghrelin then write a 1,000 word essay discussing how they affect appetite in different ways.
8. Write a list of 10 healthy eating snacks and explain why they would help to reduce hunger.
9. Recreate the cheese cracker experiment, but use 10 crackers instead of 15. After every 2 biscuits, write down on a scale of one to ten how much you are enjoying the snack, compared to the first 2 biscuits.
10. Keep a food, sleep, stress and exercise diary over a week and then assess it to see which lifestyle factors influence your hunger the most.

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