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ARE COOKING SKILLS ESSENTIAL TO IMPROVING PUBLIC HEALTH?

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Introduction
Cooking skills are said to be in decline and/or are being devalued, which is leading concern about what these changes mean for food choices and health outcomes. The concern with cooking focuses on the loss of a certain style of cooking referred to as cooking from scratch that is considered by some to be essential to achieve healthy food choices and positive health outcomes. Cooking from scratch aims to use basic healthy foods shown in the Australian Guide to Healthy Eating (National Health and Medical Research Council 2013). The focus on changes to cooking from scratch or home cooking comes from the suggestion that we live in a food environment where it is possible to eat without cooking from scratch and/or doing any home cooking.

Evidence on what Australian’s are eating from our recent 2011-12 National Nutrition and Physical Survey showed that there is still room for improvement in food choices. Just under half (48.3%) of Australians aged 18 years and over reported that they usually met the guideline for daily fruit intake, while 8.3% met the guideline for daily vegetable intake. Taking both guidelines into account, only 5.6% of Australian adults had an adequate usual daily intake of fruit and vegetables. On average, just over one-third (35%) of total daily energy reported as consumed was from ‘discretionary foods’ which includes cakes, biscuits and chips as examples. One suggestion is that this pattern of food choices is related to a lack of cooking skills. In 2011-12, 63% of adults and 25% of children in Australia were overweight or obese, with these rates having risen since previous surveys. The rise in obesity in Australia is portrayed as an outcome of this concern with cooking skills.

To be able to answer the question posed in the title of this article ‘Are cooking skills essential to improving public health?’ we will discuss why skills are changing what do we mean by cooking, what are cooking skills and how cooking skills might be linked to better food choices health outcomes.
WHY ARE COOKING SKILLS CHANGING?

There are many reasons why cooking skills might be in decline or being devalued. The teaching of home economics, where cooking skills have traditionally been addressed, has been dropped in many schools or left up to the schools to decide if it is offered. The impact of changes in the food system and food industry is supposed to have led to deskilling, whereby people lose skills and confidence in cooking and in turn become more reliant on products provided by the food industry.

There has been an increased production and heavy marketing of convenience and fast foods by the food industry and this is believed to have contributed to deskilling and/or devaluing of cooking including food preparation skills. The use of convenience foods may reduce the need to rely on cooking from scratch, and some people seem willing value this convenience over other aspects such as nutrition. The concern is that when you are reliant on others to cook for you, such as the food industry (fast food, supermarkets, food companies) this will limit the control you have over the nutritional value of the foods you are eating.

There is also changing responsibility for cooking in households as part of generational changes. Traditionally it was the female in the household who had responsibility for choosing foods and deciding on nutrition for families. More women now participate in the workforce and this is said to also contribute to changing responsibilities and cooking skills particularly for men and adolescents. This raises the question about who needs to learn to cook and whether this is an important life skill for everyone to learn.

WHAT DOES COOKING MEAN?

One of problems in trying to assess if cooking skills are associated with health is understanding what is meant by the term cooking. If we look up cooking in the dictionary we find definitions that refer to the conversion of raw material into cooked food with the use of fire or heat. The Macquarie Dictionary defines the verb “cook” as to prepare (food) by the action of heat, as by boiling, baking, roasting, etc. This definition focuses on the process of cooking and the technical skills required. Others consider that cooking is not just the use of heat but cooking from scratch, which usually is described as taking raw, basic or unprocessed foods and transforming these into a meal or snack. Cooking from scratch is seen as different to opening food packages containing convenience foods and reheating meals/snacks, which is sometimes described as meal assemblage. So far there is no agreed definition of cooking used in public health and nutrition areas and all of the practices described above need to be considered as cooking.

WHAT ARE COOKING SKILLS?

It is also necessary to examine what are the skills that are required to cook, particularly if cooking covers a range of practices. Cooking is generally considered a complex practice because it requires thought and planning as well as technical skills. As an example, people regularly problem solve whilst cooking such as deciding on combinations of ingredients or deciding how much time food might need in the oven. One of the difficulties in conducting research to link cooking skills to food choices is that as cooking knowledge and skills are used regularly they become more intuitive in nature and it is difficult for people to describe their cooking skills objectively.

In Australia, there has been one attempt to elucidate the food skills required by young people by experts in the development of a national home economics curriculum. The four areas of expertise identified were knowledge, information, skills and the practical application of knowledge and resources that young people would need to be exposed to in order to improve their food preparation (Fordyce-Voorham 2011).

Short (2003), in the United Kingdom has identified the task-based or skill-based nature of cooking that demonstrates the complexity of cooking skills. Short’s research describes these under five skills areas. These areas are described in Table 1.

| Mechanical skills involving techniques such as chopping. |
| Perceptual skills where people are able to judge taste, colour and texture. |
| Conceptual skills such as the ability to predict the outcomes and be creative or demonstrate ability to adapt. |
| Academic skills such as knowledge of food safety and nutrition; |
| Planning skills such as the understanding of the timing of cooking tasks and fitting of cooking around other tasks. |

Table 1. Types of Cooking Skills (Short 2003)
We need to know more about how people use these skills to create healthy meals and snacks. Is convenience food really contributing to a deskill or declining use of cooking skills? The use of convenience food has been shown to assisting people with inventing new meals it in enables people to create new meals. Convenience foods are regularly used to produce home cooked meals. This highlights how the ideal of cooking from scratch may be far removed from the reality of how cooking is done today. People may be using their cooking skills in different ways.

**ARE COOKING SKILLS LINKED TO FOOD CHOICES AND HEALTH OUTCOMES?**

Public health practitioners assume that fast foods, takeaway foods and convenience foods are more likely to be unhealthy choices than cooking from raw ingredients (from scratch) and cooking in the home. Therefore people with poorer cooking skills, less likely to use these skills and/or those more likely to use industry pre-prepared foods may have poorer food choices and this may impact on health in areas such as obesity.

Unfortunately there is not very much research which links cooking skills with food choices. In the research that has been conducted there is reliance on people self-reporting their cooking frequency and skills. What little research there is does suggest that cooking frequency contributes significantly to the consumption of more vegetables and fruit and less fat, in this case in young adults (Larson et al. 2006). Swiss adults’ self-reported cooking skills were assessed using a 7-point scale and those who rated their skills higher were less likely to consume fast food (van der Horst, Brunner, and Siegrist 2011). One longitudinal study in America has found that if adolescents were cooking regularly they had better food choices and that this continued into adult life (Laska et al. 2012).

In Australia there is very little evidence but what there is does suggest that cooking skills are essential for healthy food choices. A Melbourne survey of over 1000 women found that those who ate two or more serves of vegetables per day also reported planning meals, enjoying cooking and liked to try new recipes (Crawford et al. 2007). In Brisbane, households reported buying more vegetables when the main cook indicated they were confident to cook them (Winkler and Turrell 2009). Western Australian government surveys show a relationship between high self-rating of cooking skills and vegetable consumption (Begley, Meng, and Pollard 2016).

Again only a few studies have tried to measure the relationship between cooking and health outcomes and these show mixed results. For example, spending less than 20 minutes preparing meals by middle-aged women is significantly associated with less vegetables and sodium intake, however there was no relationship with their body weight (Chu et al. 2012). Other studies indicate that cooking at home is associated with a healthier diets but not with people’s intention to lose weight (Wolfson and Bleich 2015). Obesity has complex causes and trying to demonstrate a link between cooking and weight is difficult. A ten-year study of the cooking regularity of older independent Taiwanese found that those living longer were more likely to indicate more frequent cooking (Chia-Yu Chen et al. 2012).

It is also important to consider how using cooking skills could contribute to mental health. Adolescents in a large New Zealand study who reported having a high cooking ability not only had better food choices but also better mental health indicators and stronger connections to family (Utter et al. 2016). This evidence points to the importance of households and families cooking and sharing meals.

**EVIDENCE OF COOKING SKILL USE**

There is clearly a challenge in linking changing cooking skills with poor food choices and health outcomes. There is inconclusive evidence that cooking skills are in decline and/or being devalued. Generally people in a variety of countries such as America, Germany, United Kingdom and Australia report high levels of confidence with cooking techniques and preparing most foods. UK research reported almost two-thirds of people responding to a national survey reported cooking a main meal at least five times per week and 90% reported being able to cook convenience foods, a complete meal from ready-made ingredients and a main meal from basic ingredients (Adams et al. 2015).

Meat and Livestock Australia research found that three-quarters of people who responded to an online survey in 2012 reported they regularly cooked from scratch (Worsley et al. 2014). These results translate to most people eating meals prepared at home on most days (Virudachalam et al. 2014).
General interest in cooking appears to be high. It would appear that the rise of celebrity chefs such as Jamie Oliver, the increase in television cooking shows such as MasterChef and internet recipe websites would suggest that Australians are interested in cooking (Villani et al. 2015). Meat and Livestock Australia research in 2012 has shown that nearly three-quarters of those surveyed wanted to learn more about cooking including making healthier and inexpensive meals and that this interest was across all age and education levels (Worsley and Wang, 2014).

CONCLUSION

Cooking is seen as an essential everyday life activity and therefore a necessary life skill. Achieving healthy food choices is only one of the many reasons why people choose to cook. People seem to be engaged in cooking from the research that has been done and this has some positive relationship with healthy food choices but much more research is required to understand what cooking skills are required for healthy food choices and how important is cooking from scratch.

Cooking is still considered essential for improving public health. Public health may need to assist people with how to cook healthier meals and snacks given the concerns about deskilling or changing cooking skills. Lang and Caraher (2001) propose that cooking and cooking skills are in transition as a product of cultural shifts that result from ongoing changes in our social and technological environments. These statements on the “culinary transition” suggest that cooking skills have in fact always changing. This culinary transition is described as:

The process in which whole cultures experience fundamental shifts in the pattern and kind of skills required to get food onto tables and down throats (Lang and Caraher 2001:2).

Therefore, cooking skills are not necessarily in a poorer state today compared with people’s perceptions of older days. People have not stopped cooking, it appears we might be just doing it differently.

STUDENT ACTIVITIES

1. Why is there a concern about decline in cooking skills?
2. Why are cooking skills changing?
3. a. What is meant by cooking from scratch?
   b. Why does cooking from scratch improve the quality of meals?
4. What is meant by a culinary transition?
5. Observe someone preparing a meal.
   a. Which ingredients would you consider as convenience foods? Why/why not?
   b. Does the use of convenience foods enhance or detract from the nutritional content of the meal?
6. What evidence is available that links cooking skills to health?
7. What benefits does cooking skills offer to individual, family and public health?
8. Select a recipe suitable for a meal. Classify the instructions according to the five cooking skill areas.
9. Write a persuasive article for a food blog about the importance of cooking skills for adolescents and young adults.

Going further

1. investigate the presence of a ‘culinary transition’ by asking an older relative or friend about their memories of cooking when they were children and compare this to your own experiences. Record your observations and suggest explanations for each of the similarities and differences in the stories.
2. Conduct a class discussion about the relationship between cooking skills and health status.
3. Health professionals in developed countries have been calling for governments to support compulsory home economics and/or food education courses in schools. Debate the proposition: School-based home economics classes should be compulsory.
REFERENCES


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Villani, AM, T Egan, JB Keogh, and PM. Clifton. 2015. ‘Attitudes and beliefs of Australian adults on reality television cooking programmes and celebrity chefs: is there cause for concern? Descriptive analysis presented from a consumer survey’, Appetite, accepted manuscript.


In November of 2015, The World Health Organization released a report investigating how likely red and processed meats are to cause cancer. The Internet promptly exploded with headlines proclaiming ‘How your steak is giving you cancer’ and ‘Bacon is as bad for you as smoking’. Taking a step back from the attention-grabbing headlines, the real substance of the report was much less alarming.

The meat and cancer report which generated so much public interest was prepared by the International Agency for Research on Cancer (IARC) – a group of 22 experts in their field from 10 different countries (Bouvard 2015). The IARC serve to help guide advice on food and health given by the World Health Organization.

Yes, the IARC did conclude that processed meat and also likely red meat are linked to causing colorectal cancer. Colorectal cancer (also called bowel or colon cancer) is the second leading cause of cancer death in Australians so the findings rightly did garner a lot of media interest.

Yet even the highest level committee members of the IARC were not saying that if you eat a sausage you are a candidate for cancer. What they were warning about was that if processed meats were a daily feature of your diet, your risk of bowel cancer would go up. To put the risk in context, for every 50-gram portion of processed meat eaten daily (about two slices of bacon), this increases the risk of bowel cancer over a lifetime by 18 percent.

What is surprising about the heated public interest in the report was that the findings were nothing new at all. For at least 10 years, the link between red meat, especially processed meat, and colorectal cancer has been well described. Peak cancer bodies such as the World Cancer Research Fund and the Cancer Council Australia have recommended people eat less red and processed meats for exactly the same reason of cancer risk. So the IARC report is more a new framing of evidence rather than a presentation of a new scientific finding.

What is meant by red and processed meat?

It may seem obvious what red meat is, but some white meats also count as red meat. Confused? Red meat is considered the muscle flesh that comes from cattle, sheep, pigs and goats. Pork looks white when it is cooked, but it is typically red when raw from its high haemoglobin content. Fish and poultry though are not part of the red meat family and were not linked to cancer by the IARC.

Processed meat on the other hand is any type of meat (including poultry) that has undergone salting, curing, fermentation, addition of additives or smoking to enhance its flavour or improve preservation. Bacon, hotdogs, sausages, ham and salami all belong here.
How strong is the evidence?

The IARC in forming their conclusions about red and processed meat and cancer took many things into account. They reviewed more than 800 published research studies that looked at the relationship between meat and cancer. These studies spanned several countries and continents with varying ethnicities and diets. A summary of their findings are shown in Figure 1.

Figure 1. The level of evidence linking red and processed meat to cancer. Source: Cancer Research UK

For processed meat, it was classified as Group 1 under the IARC classification scheme. This is the highest category and is used when there is sufficient evidence of a substance causing cancer in humans.

The evidence for red meat and cancer was ranked one group lower. In this case, red meat was considered as ‘probably’ carcinogenic to humans, possibly causing bowel cancer. It was also linked to pancreatic and prostate cancer.

Smoking and asbestos are also classed as Group 1 carcinogens by the IARC. Having processed meat in the same carcinogen group as smoking explained the alarming news headlines upon the release of the report declaring ‘Bacon is as bad for you as smoking’. These types of headlines work great for getting website clicks, but are very misleading.

Just because something is linked to causing cancer, does not mean all such substances are equally dangerous. It is all comes down to risk. And the risk of developing lung cancer from smoking is far, far higher than the risk of developing bowel cancer from eating bacon.

A comparison of the risk of cancer from smoking versus eating red and processed meat is illustrated in Figure 2. By far, smoking is the biggest explanation for most cases of lung cancer, while for bowel cancer, the relationship with meat is much lower.

You can see the contrast in Figure 2 for how many cases of lung cancer could be prevented each year in the United Kingdom if people gave up smoking. Compare that to how many cases of cancer would be prevented if no one ate processed or red meat. Unlike smoking which has no health benefits, red meat is still a valuable source of nutrition so this should be considered as a counterpoint when discussing cancer risk.

Figure 2. Comparing the risk of cancer from smoking versus eating red meat. Source: Cancer Research UK
Why is it so?

So what is it about red and processed meats that can make them carcinogenic? That is still an unanswered question, but several plausible culprits have been proposed.

And the common theme among them is the damage they can do to the cells lining the wall of the large bowel.

The first culprit is the pigment that gives red meat its colour: haemoglobin. In the gastrointestinal tract, haemoglobin can be broken down to a family of chemicals called N-nitroso compounds. These compounds have been found to damage the cells that line the bowel, causing them to divide and replicate more to repair the damage. It is this increased cell replication that increases the chance of errors developing in the cells' DNA; errors which can be the first step on the road to cancer. Processed meats can have a double-whammy effect because they contain additional chemicals that are used as preservatives that can also make N-nitroso compounds.

An interesting side turn here is that eating lots of green-coloured vegetables may lower colon cancer risk. The reason for green vegetables being cancer protective could be from the green chlorophyll molecule which is central to the process of photosynthesis. Chlorophyll is very similar in structure to the animal haemoglobin molecule. Chlorophyll may compete with haemoglobin or help eliminate it from the body before it has a chance to be converted into N-nitroso compounds.

A second culprit could be the actual cooking process of red meat itself, especially grilling or barbequing. The combination of high temperatures and charring of meat produces chemicals on the surface of the meat that may increase the risk of colon cancer. One simple way to reduce the formation of these compounds is to marinate meat first. Think of it as a protective layer on the meat, but with the added bonus of extra taste.

Yet another theory is that the iron in meat, so often promoted for its health benefit, could be a candidate for causing cancer. Iron is needed for a host of health reasons, but too much of it can place a higher oxidative stress (a process not unlike ‘rusting’) on the body, and damage cells lining the large bowel.

Putting the recommendations into perspective

With every media story reporting on a new dietary villain that causes cancer, it can make people throw their arms in the air and declare that “everything causes cancer, so why even worry about it?” The constructive message though is that there are many positive lifestyle habits that can lower the risk of a person developing cancer. Table 1 outlines some of these factors and takes note of how several of them are strongly linked to reducing the risk of colorectal cancer.

Table 1. Lifestyle factors that can reduce the risk of cancer

<table>
<thead>
<tr>
<th>Lifestyle factor</th>
<th>Cancer(s) where risk is lowered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibre</td>
<td><strong>Colorectal</strong>, oesophagus</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>Oral cavity, oesophagus, lung, stomach, colorectal</td>
</tr>
<tr>
<td>Physical activity</td>
<td><strong>Colorectal</strong>, breast, oesophagus, pancreas, liver, endometrial</td>
</tr>
<tr>
<td>Lactation</td>
<td><strong>Breast</strong></td>
</tr>
<tr>
<td>Calcium</td>
<td>Colorectal</td>
</tr>
<tr>
<td>Dairy foods</td>
<td>Colorectal</td>
</tr>
<tr>
<td>Fish</td>
<td>Colorectal</td>
</tr>
<tr>
<td>Garlic</td>
<td>Colorectal</td>
</tr>
<tr>
<td>Selenium</td>
<td>Lung, colorectal, prostate</td>
</tr>
<tr>
<td>Folate</td>
<td>Oesophagus, pancreas, colorectal</td>
</tr>
</tbody>
</table>

*Cancers bolded are where evidence is the strongest


www.dietandcancerreport.org
When it comes to diet and cancer, it should be no surprise that fruits, vegetables and unprocessed grains and cereals come out on top as being the best ‘cancer preventing’ foods. While some foods may be promoted as being more beneficial, there is no one single ‘superfood’ that can prevent cancer; it is a combination of good eating habits and food variety that gives the greatest benefit.

Physical activity is now recognised as a potent ‘cancer-preventing’ habit. Estimates link regular physical activity to a 20 to 40 percent lower risk of colon and post-menopausal breast cancer and a potential benefit in lowering prostate cancer risk too. In addition to its cancer-prevention benefit, physical activity plays a large part in preventing heart disease and diabetes so the health benefits are multiplied.

It is important to define what is meant by ‘risk’ to better appreciate cancer prevention guidelines. There is no such thing as something ‘causing’ or ‘preventing’ cancer – just raising or lowering a person’s chance of developing cancer. Cancer prevention through lifestyle changes are all about lowering a person’s risk, but there can never be any guarantees; however, sensible changes now will likely have positive benefits in the future.

In Summary

So is it game over for bacon and steak? No, not at all. If you choose to eat such foods, then there is no reason to now exclude them from your diet. Red meat is fine to eat in moderation – it is a good source of nutrients such as protein, iron and zinc. It is just not having it all the time.

The World Cancer Research Fund recommend eating no more than 500 grams of cooked red meat per week and to limit processed meat. Chicken and fish make excellent alternatives to red meat. Or you could even consider having more vegetarian meals in your diet.

Choose a variety of cooking methods for your red meat too. Grilling and charring of food is okay occasionally, but consider lower temperature techniques like stewing at times.

Distilling all of the nutrition advice about reducing the risk of cancer with diet finds us back at some very uncontroversial basics. Eating plenty of plant-based foods full of fibre including fruits, vegetables, and wholegrains and not eating a lot of red and processed meat is the cornerstone of reducing the risk of cancer for everyone.

References


Further Reading


Student Activities

1. What is the relationship between the International Agency for Research on Cancer (IARC) and the World Health Organisation (WHO)?

2. a. What were the IARC recommendations about the consumption of meat?
   b. How did the IARC reach these conclusions about meat consumption?

3. When the IARC reports were published in the mass media, considerable public interest and commentary occurred.
   a. Why did this report create so much controversy?
   b. How can the credibility of reports such as the IARC be evaluated by the public?

3. a. What is colorectal cancer? b. What are the risk factors for colorectal cancer?

4. Define carcinogenic.

5. a. What is the place of red meat in the Australian diet?
   b. Compare and contrast the nutritional benefits and risks of red meat, white meat and processed meat in the diet.

6. How can red meat and processed meats be reduced in the diet? Suggest some sustainable strategies to reduce the amount of red and processed meats in the diet.

7. How can lifestyle related cancer risks be reduced?

8. Which foods are considered to be cancer preventative? Why?

9. Examine the effectiveness of public health campaigns such as ‘Meatless Monday’ in reducing red meat and processed meats in the diet.

10. What are the advantages and disadvantages of reducing meat consumption? In your response, consider all of the following factors - farming, food processing manufacturers, economic, environmental and human health.

Going further

1. a. Conduct a vox pop among your classmates to find out whether and how often red and processed meats are consumed in an average week.
   b. Present the results using graphing software.
   c. Discuss your findings.

2. Using the menu from your school canteen.
   a. Evaluate the menu in terms of the meat and processed meat content.
   b. Make recommendations for reducing the red meat and processed meat content of the menu.
A Perth high school has built an impenetrable metal fence and padlocked gates to stop its students going to nearby fast food outlets. Warnbro Community High School also had to close its unviable canteen.

The school’s new fence cost $83,000 after children repeatedly cut holes in the old wire one to get out, causing $69,000 damage last year.

Principal Kya-Louise Graves said the P&C-run canteen closed at the end of last year because of concerns about its financial viability, not because foot outlets and supermarkets were so close.

“The school’s P&C decided to close the canteen because it wasn’t sustainable to keep it running,” she said. “This is a temporary closure and we are looking at alternative options, with the aim of having a canteen up and running again this year.”

Healthy lunches help kids at school

The school, with more than 1000 children from Years 8 to 12, has a McDonald’s and a KFC restaurant, as well as other shops and food outlets, across a busy dual carriageway from it.

Ms Graves said students had been damaging school fencing to get to the fast food outlets.

She said the school had a “robust” breakfast club, where all students could now make themselves a sandwich and take fruit for lunch.

The West Australian understands the school also asked fast food outlets not to serve children in a school uniform.

Public health nutritionist Christina Pollard, a researcher at Curtin University, said the school was in an incredibly challenging situation and canteens were important to provide healthy food at schools.

“A well-run canteen providing nutritious food can be effective in a business sense and in supporting the health and behaviour of kids,” she said.

Dr Pollard said the availability of healthy food at school was important from both a nutrition and education perspective because children needed healthy habitual food preferences from an early age.

“The more frequently children consume fast foods, the more likely they will become overweight and obese,” she said.

Dr Pollard said the proximity of fast food outlets to schools was a problem that should be controlled.

“Salty, fatty foods that are heavily marketed are something that children seek,” she said.
**Student activities:**

1. a. Why did the school build a large fence and close its canteen?
   
b. Do you think their action was justified? Why/why not?

2. All schools have a duty of care for their students. Should duty of care include the food choices that students make? Why/why not?

3. What strategies could be used to encourage food choices that are more consistent with the Australian Dietary Guidelines at the school?

4. The school are intending to reopen their canteen. Make suggestions for making healthy choices, the easy choice for students and staff.

5. Rising obesity rates among children and young people is the major concern discussed in the article. Discuss the other consequences of poor food choices on student health.