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EVIDENCE
REVIEW

A rapid review of evidence

Fats and Oils: dietary
recommendations, messaging and
consumer understanding in Australia

20 February 2020

Fats and Oils: dietary recommendations, messaging and consumer understanding in Australia

A rapid review of evidence prepared for the National Health and Medical Research Council

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Disclaimer: This rapid review is not necessarily a comprehensive review of all literature relating to the topic area. It was current at the time of production (but not necessarily at the time of publication) and is based on sources believed to be reliable.

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Abbreviations

ADGs	Australian Dietary Guidelines
AGTHE	Australian Guide to Healthy Eating
AMDR	Acceptable Macronutrient Distribution Ranges
DFaD	Discretionary Food and Drinks (review)
FSANZ	Food Standards Australian and New Zealand
FRSC	Food Regulation Standing Committee
HF	Heart Foundation (Australia)
MLA	Meat and Livestock Australia
NHMRC	National Health and Medical Research Council
NIP	Nutrition Information Panel
NRVs	Nutrient Reference Values for Australia and New Zealand
NZ	New Zealand
OECD	Organisation for Economic Co-operation and Development
PHAA	Public Health Association of Australia
TAPPC	The Australian Prevention Partnership Centre
UK	United Kingdom
US	United States of America

Executive summary

Introduction

The Food Regulation Standing Committee (FRSC) has identified concerns regarding consumer understanding of fats and oils with regard to both health and sustainability issues. Food Standards Australia and New Zealand (FSANZ), under the auspices of the FRSC, is currently considering labelling of foods containing fats to increase consistency with the Australian Dietary Guidelines (ADGs). To contribute to this work, FRSC sought advice on appropriate dietary guidance that should be provided to consumers to help them choose 'healthy' fats and oils and limit consumption of 'unhealthy' fats and oils.

This project was an adjunct to the two phases of the recent Discretionary Food and Drinks systematic rapid review (DFaD review) [1, 2].

Aims

The aims of this project were to:

- review and consider the messaging provided to consumers via the ADGs and other key Australian Government and non-government documents on fats and oils,
- determine consumer understanding of fats and oils, and
- identify opportunities to align messaging on fats and oils to minimise any identified gaps in understanding and promote more healthy eating patterns.

Methods

In addition to considering the evidence presented in the DFaD review, new evidence was identified by conducting a rapid literature search using a systematic approach, including:

1. A rapid review of:
 - the ADGs and affiliated materials, and other grey literature from both government and non-government sources, that present dietary guidance pertaining to fats and oils, and
 - reviews of consumer understanding of messaging around fats and oils.
2. Extraction, synthesis and analysis of data to capture key messages including, but not limited to, broad messaging around: healthy fat allowances, unhealthy fats and oils, fats in discretionary foods, unsaturated fats in the five food groups, and fats visible and removable in healthy foods.
3. Developing advice on the alignment of messaging within the *Eat for Health* resources (including the ADGs and affiliated resources) to identify opportunities to strengthen messaging to enhance consumer understanding and selection of healthy fats and oils.

Results

Summary of key literature identified in this review

(1) Key grey literature containing dietary messaging around fats and oils targeting consumers and other stakeholders identified included:

- the ADGs 2013 and companion suite of resources, published on the Eat for Health website (eatforhealth.gov.au) [3-5]
- key documents that informed the development of the ADGs 2013, including the current Nutrient Reference Values for Australia and New Zealand [6]
- the Heart Foundation's (HF) 2019 position statements and underlying evidence briefs on Dairy and Heart Healthy Eating, Meat and Heart Healthy Eating and Eggs and Heart Healthy Eating [7].

Other websites of non-government organisations (NGOs), government agencies and food industry groups containing dietary messaging provided less structured dietary guidance around fats and oils.

(2) There were two reviews of consumer understanding of the messaging around fats and oils that met the criteria for inclusion:

- a review by Food Standards Australia and Zealand (FSANZ) in 2018 [8], and
- a narrative review by Liu and colleagues published in 2017 [9].

The FSANZ review included 70 studies published between 2003 and 2017; only one-third were published after the 2013 release of the current ADGs, and only 11 (16%) did not have a focus on labelling of on food packaging. The FSANZ review is of moderate quality, but it identified that most of the included papers that did not have a focus on food labelling were of low quality. The review by Liu et al is a narrative review in case study format of the history of dietary fat science, recommendations and consumer understanding that summarises presentations from a 2015 symposium in the US; hence it is of low quality.

Current messaging around fats and oils

It was not always clear which stakeholders were being targeted by the identified dietary messages around fats and oils. Multiple stakeholder groups, including health professionals, educators, regulators, industry groups, decision makers, and the general public, were listed as the potential target audience. Exceptions included the brochures for specific age, gender and life course stages developed specifically for the general population as part of the ADGs suite of resources.

Findings identified messaging around 'fats and oils' in three main areas: as nutrients (fats and fatty acids), as foods and as contributing to dietary patterns. This reflects the complexity of the terminology and understanding of 'fats and oils', which covers:

- nutrients (such as total fat content, macronutrients or different types and groupings of fatty acids), and/or
- foods that are predominantly comprised of fats (such as oils and spreads), and/or
- components of healthy foods (such as visible fat on meat) and/or
- ingredients in foods (including both 'hidden' fats in five food group and discretionary foods).

No messaging around fats and oils and environmental sustainability was identified in the review, except for the Public Health Association of Australia's position statement on palm oil.

Some current messaging combines both food-based and nutrient-based recommendations, conflating messaging around 'what' to eat with messaging implying 'why' to do so. This is particularly the case with ADGs Guideline 3 around 'limit intake of foods high in saturated fat'. In the specific context of milk, yoghurt and cheese in Guideline 2, which encourages enjoyment of a wide variety of nutritious foods from the five food groups, messaging encourages consumption of "mostly reduced fat". In contrast, Guideline 1, which is focussed on achieving and maintaining a healthy weight, tends to place more emphasis on fat contribution to kilojoule intake, energy density and total fat intake. Messaging around foods that are predominantly comprised of fats (oils and spreads allowance) are promoted mainly through the *Australian Guide to Healthy Eating* (AGTHE).

The current ADGs 2013 reflect the evidence base outlined in the underlying evidence review and other authoritative reports, generally de-emphasising restriction of all dietary fats and focussing on limiting intake of foods and drinks high in saturated fats, and, to a lesser extent trans fats. Some relatively minor variations in messaging across the suite of ADGs resources was identified.

The dietary patterns recommended by the ADGs are not intended to be 'low fat' but are constrained by the Acceptable Macronutrient Distribution Ranges (AMDR) outlined in the Nutrient Reference Values (NRVs) [4]. Similarly, the ADGs Evidence Reviews [14] showed that consumption of milk is associated with decreased risk of heart disease and some cancers *regardless of the fat content of the milk*, and it is only dietary modelling [15] within the context of relatively low energy requirements of sedentary populations that informs guidance to consume "mostly reduced fat" milk.

The search of Australian websites for recent dietary messaging around fats and oils identified little recent guidance at population level. An exception was the recent publication of the HF's position statements and underlying evidence briefs on Dairy and Heart Healthy Eating, Meat and Heart Healthy Eating and Eggs and Heart Healthy Eating. The HF messaging is quite complex, with five recommendations in each position statement for each of these three food categories, underscored by another five Heart Foundation Heart Healthy eating principles. The content of the revised HF guidance is similar to the ADGs 2013, but recommends consumption of less red meat in line with more recent evidence (<355g per week compared to <455g per week). Notably, in a major shift of position, the recent HF guidance does not specifically recommend reduced fat milk products, except for people with clinical conditions.

Fats and oils messaging on the websites of most other non-government organisations (NGOs) and professional associations was also generally consistent with the recommendations of the ADGs. However, most NGOs, including the HF, did not include the ADGs in reference lists for resources. Similar to the HF, NGOs focussed on specific diseases, such as Cancer Council Australia and Diabetes Australia, also provided more clinical dietary messaging around fats and oils.

Key food industry commodity groups and umbrella organisations – including Dairy Australia, Meat and Livestock Australia (MLA), Australian Eggs, Growcom and the Australian Food and Grocery Council – tended to promote the products of member organisations in the context of the ADGs 2013 on their websites. With a few exceptions, these websites did not accurately detail

ADGs messaging.¹ Such messaging did not usually refer to fats and oils in the context of foods, but tended to highly select more nutrient-specific data. Stakeholder messaging around fats and oils tended to more accurately reflect the ADGs evidence base than their dietary messages around discretionary foods as found in the DFaD reviews.

Consumer understanding of messaging re fats and oils

The vast majority of included papers in the two identified reviews of consumer understanding of dietary messaging around fats and oils [8, 9] defined or interpreted “consumers” as members of the general public, rather than of other stakeholder groups, such as health professionals, educators, regulators, industry groups or decision makers.

The FSANZ review noted a strong focus on fats, rather than oils, in research on consumer response to relevant messaging. FSANZ considered this reflected the inclusion of ‘oils’ into the broader term of fat (and types of fat) in food labelling initiatives in Australia and New Zealand, and could be expected given the nutrient-based focus of messaging.

Both FSANZ (2018) and Liu et al (2017) found that consumers were concerned generally about the amount of fat they consumed. They were aware also that there are ‘healthy’ (‘good’) and ‘unhealthy’ (‘bad’) dietary fats, and that it is important to consume some fats, but with the exception mainly of olive oil, could not confidently identify healthier options. Particularly in the US, consumers were knowledgeable about omega-3 fatty acids, and to a lesser extent saturated fats and trans fats, but less sure about food sources of the former. Relatively few studies on trans fats were identified in Australia and New Zealand. Knowledge decreased as the detail and specificity of nutrients in messaging increased. Neither review identified evidence that better understanding of ‘healthy’ and ‘unhealthy’ fats as nutrients (or the underlying mechanisms) would improve consumer understanding of food sources or their food choices.

Both reviews reported that many consumers were confused about perceived contradictory and/or changing nutritional advice in relation to fat consumption and health outcomes. While the FSANZ review implied such confusion was the result of dietary guideline messaging, Liu et al suggested that this was more likely related to the difficulties consumers had acting on nutrient-based messaging; for example, in the US dietary guideline messaging includes recommendations to consume no more than 10% of energy as saturated fat, whereas in Australian such information is included in the NRVs, not the ADGs.

Both reviews noted that consumers were also confused about how much fat they should be eating. While most consumers stated intent to reduce intake of fat and/or different types of fats, particularly saturated fats, in one US survey 25% reported they had reduced intake of unsaturated fats for health reasons – which is inconsistent with nutrition evidence.

The reviews noted that many consumers ignored, or were less concerned about, total fat or specific fats if the (unhealthy) food containing these was considered to be a ‘treat’ or a ‘favourite’. Consumers were also more accurate in assessing the fat content of healthy foods than of unhealthy foods, and expressed difficulty determining fat content of take-away and restaurant meals.

¹ As was found in the DFaD reviews

Discussion

The results of this review suggest that overall messaging around fats and oils in the diet should be considered in the context of broader dietary guidance, particularly related to messaging around more clearly defined 'healthy' and 'unhealthy' foods² and dietary patterns.

Given that most of the included studies in the included reviews were international and predated the release of the current ADGs in 2013, those reviews provide limited insights into Australian consumer knowledge, understanding and behaviours associated with current fats and oils messaging. This was particularly the case in the FSANZ review, which did not consider the date of studies when interpreting results. It was also challenging to identify exactly what wording of what messaging was being assessed, or if consumers' knowledge, understanding and behaviours may have been influenced by other factors, such as advertising or specific aspects of food labelling. As people choose to consume foods, not nutrients, messaging around fats and oils as nutrients can add unnecessary complexity to dietary guidance.

The available evidence shows that consumer understanding around fats and oils was limited. This is complicated by the fact that fats and oils may be seen as either foods (such as oils and spreads) and/or components of foods (such as visible fat on meat) and/or ingredients in foods (including 'hidden' fats in both five food group and discretionary foods) and/or nutrients (such as macronutrients or different types and groupings of fatty acids). The results suggested that moving dietary guidance to more practical, actionable food-based messaging is likely to be effective in improving consumer understanding around healthy choices.

The lack of identification of specific target groups for fat and oil messaging may help explain the varied emphasis on "what" should be eaten, "why" it should be eaten, and/or "how much" should be eaten in current dietary guidance in Australia. Better targeting may help refine messaging.

Conclusion

Opportunities to align messaging on fats and oils to minimise identified gaps in consumer understanding and promote healthy eating patterns

The DFaD reviews and the review by Liu et al (2017) outline contemporary evidence that it is whole foods and dietary patterns, rather than any specific nutrient or component such as fats and oils, that determine diet-related health outcomes. In particular, there is a growing body of evidence that interactions in whole foods between nutrients, other food components, mechanisms of food processing and the food matrix itself need further consideration when developing dietary guidance.

The results of this review confirm that the different ways in which consumers see fats and oils in the diet should be considered in formulating guidance. Table 1 presents a summary of suggested messaging. Table 2 summarises opportunities to minimise identified gaps in consumer understanding of messaging around fats and oils identified in this review.

² The findings of the systematic review on discretionary foods supported replacement of the term 'discretionary' food and drinks with the term 'unhealthy' food and drinks, and provided fit-for-purpose definitions of the terms 'healthy' and 'unhealthy' foods and drinks based on evidence of the health impacts of consumption [2].

Table 1 Suggested messaging on fats and oils to improve consumer (general public) understanding

Area of messaging	Suggested message content
Fats (and oils) as nutrients	At population level, no messaging required. ³
Healthy (unsaturated) fats and oils as foods	Enjoy healthy foods that are rich sources of healthy fats and oils. Choose healthy oils derived from choices including sunflower and safflower seeds, soybeans, cottonseeds, sesame, corn, grape seeds, canola seeds, nuts (such as peanuts, almonds and walnuts), rice bran, avocados and olives, and enjoy the spreads and pastes that are made from these healthy foods.
Unhealthy (saturated) fats and oils as foods	Avoid unhealthy oils and spreads including palm oil, coconut oil, butter, cream and cooking margarine.
Healthy foods that are relatively high in different types of fats	Enjoy healthy foods and drinks from the five food groups including: oily fish, avocados, nuts and seeds, legumes, olives, poultry, eggs, milk, yoghurt and cheese, and lean grass-fed meats (no more than 2-3 serves per week).
Unhealthy foods that are relatively high in fats or saturated and/or trans fats	Avoid unhealthy foods including highly processed foods such as many biscuits, cakes, pastries, pies, chocolate, processed meats, sausages, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
Unhealthy (saturated) visible fat on foods	Cut visible fat off red meat and skin off chicken/poultry.
Fat and total energy intake/nutrient density	Avoid unhealthy foods including highly processed foods such as many biscuits, cakes, pastries, pies, chocolate, processed meats, sausages, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Enjoy healthy foods and drinks from the five food groups including: oily fish, avocados, nuts and seeds, legumes, olives, poultry, eggs, milk, yoghurt and cheese, and lean grass-fed meats (no more than 2-3 serves per week).

³ Other stakeholders including health professionals, educators, food industry sectors, food regulators and decision makers could be targeted with a detailed 'background evidence' document that includes nutrient information

Table 2 Opportunities to minimise identified gaps in consumer understanding of messaging around fats and oils identified in this review

Opportunities identified
Next steps
Messaging should be food-based, rather than nutrient-based (as detailed in Table 1).
The specific wording of updated messaging content about fats and oils – including any specified quantities – should be informed by review of the ADGs and further consumer research.
Ensure review of food-based messaging around fats and oils (to all consumers and stakeholders) is conducted within the context of the broader review of the ADGs (now overdue).
Ensure review of nutrient-based messaging around fats and oils (to targeted stakeholders) is conducted within the context of the rolling reviews of the NRVs (now underway).
Format
Separate messaging about “what” to eat (targeting all consumers), from background evidence documents outlining “why” (primarily targeting health professionals, academics, educators and other interested stakeholders), with additional information about “how much” should be eaten by different age/gender/life stage population groups.
Embed messaging around foods with respect to fats and oils within a clearer framework ⁴ that identifies all unhealthy (discretionary) foods and drinks.
Consider providing recommended amounts of foods and drinks consistently in terms of household measures (e.g. tablespoons) as well as weight and volume (e.g. millilitres and grams).
Better communicate that the ADGs are informed by five key sources of evidence. ⁵
More clearly identify that nutrient information (about fats and oils, and all foods and drinks) is included in the NRVs, rather than the ADGs.
Ensure consistent terminology in food descriptors in specified food lists (if warranted at all) e.g. “reduced fat” products rather than “low fat” products.
Examine the need to re-order the guidelines in the ADGs to better focus on foods e.g. reconsider re-ordering Guideline 1 so that the ADGs do not commence with a focus on obesity, nutrient density and kilojoules.
Investigate the feasibility of adding warning labels on packaging of unhealthy (discretionary) foods and drinks.
Processes and engagement
Enhance dissemination and promotion of the ADGs to all stakeholders, including the general public.
Encourage all stakeholders to adopt and promote the ADGs.
Encourage all stakeholders to work more collaboratively to better promote consistent evidence-based dietary messaging around fats and oils from a food-based perspective.
Develop, implement, evaluate and review evidence-based nutrition policy actions that improve food supply and food environments, to help consumers adopt healthier eating patterns.

⁴ As identified in the second phase of the DFaD review [2]

⁵ The previous series of dietary guidelines and their supporting documentation [11-13]; the Evidence Report of systematic reviews of food, diet and health relationships [14]; the Nutrient Reference Values for Australia and New Zealand (NRVs) [6]; the Food Modelling System [15], and key authoritative government reports and additional literature (including those provided during public consultations [16] and a commissioned literature review on pregnant and breastfeeding women [17]).

1 Introduction

The Food Regulation Standing Committee (FRSC) has identified concerns regarding consumer understanding of fats and oils with regard to both health and sustainability issues.

Food Standards Australia and New Zealand (FSANZ), under the auspices of the FRSC, is currently considering labelling of foods containing fats to increase consistency with the Australian Dietary Guidelines (ADGs). To contribute to this work, FRSC sought advice on the appropriate dietary guidance that should be provided to consumers to assist them to choose 'healthy' fats and oils and limit consumption of 'unhealthy' fats and oils.

This project is an adjunct to the Discretionary Food and Drinks (DFaD) review initiated by a joint FRSC and Australian Health Ministers' Advisory Council working group. The two phases of the DFaD review were undertaken by expert consortia lead by Professor Amanda Lee for The Australian Prevention Partnership Centre (TAPPC) in November 2018 and The University of Queensland in September 2019. Phase 1 was a rapid systematic review of the evidence on the articulation and classification of discretionary foods and drinks in different settings [8]. Phase 2 was a rapid systematic review to consider and develop a 'fit for purpose' definition/s for 'discretionary foods and drinks' ('unhealthy foods and drinks') [9].

2 Aim

The aims of this project are:

- to review and consider the messaging provided to consumers via the ADGs and other key Australian Government and non-government documents on fats and oils,
- determine consumer understanding of fats and oils, and
- identify opportunities to align messaging on fats and oils to minimise any identified gaps in understanding and promote more healthy eating patterns.

3 Methods and research protocol

3.1 Research protocol: Broad approach

The evidence presented in the initial DFaD Rapid Evidence Reviews (Phases 1 and 2) – including relevant definitions, outcomes or issues pertaining to fats and oils – and new evidence generated in this project ('fats and oils') was analysed and synthesised. New evidence was identified by conducting a rapid literature search of reviews using a systematic approach; tabulating and synthesising data; and analysing and interpreting results.

The work was undertaken in three parts:

1. A rapid review of the ADGs and affiliated materials, including the Eat for Health suite of resources, and peer-reviewed systematic reviews, and grey literature from both government and non-government sources published since 2013 that present dietary guidance pertaining to fats and oils.

2. Extraction, synthesis and analysis of data to capture key messages including, but not limited to, broad messaging around: healthy fat allowances, unhealthy fats and oils, fats in discretionary foods, unsaturated fats in the five food groups, and fats visible and removable in healthy foods.
3. Developing advice on the alignment of messaging within the Eat for Health resources (including the ADGs and affiliated resources) to identify opportunities to strengthen messaging to enhance consumer understanding and selection of healthy fats and oils.

3.2 Detailed methods

3.2.1 Rapid review of the ADGs and affiliated materials and literature

3.2.1.a. Review of Australian based public health nutrition resources

We conducted a rapid review of key Australian based public health guidance, including from government and non-government sources, to identify messaging pertaining to fats and oils. Sources included the ADGs and affiliated materials (on the website www.eatforhealth.gov.au), the supplied FSANZ report on fats and oils, and published and grey literature reports from Australian peak bodies such as the Heart Foundation.

Documents published since January 2013 were reviewed, as 2013 is the date of the release of the current ADGs.

A comprehensive search of Australian organisations' websites for any dietary messaging around fats and oils was not feasible within the timelines and resources available for this project. Therefore a rapid scan of relevant *selected* websites was conducted for any recent updates of specific dietary guidance related to fats and oils, including positions statements, released since the development of the supplied FSANZ report on fats and oils [8] in 2018. Websites searched included those of non-government organisations such as the Heart Foundation, the Cancer Council and Diabetes Australia; professional organisations such as the Public Health Association of Australia, the Dietitians Association of Australia, the Australian Medical Association; and key food industry commodity groups, such as Dairy Australia, Meat and Livestock Australia (MLA), Australian Eggs, Growcom and the Australian Food and Grocery Council.

Search strategy:

The following search terms were systematically entered in turn into each website-specific search engine: fats, oils, diet. The first five pages of returns (when sorted by relevance) for each search term were scrutinised. If returns were not formatted as pages, then the first 10 items were scrutinised. If the list of returns included a URL link to a different webpage or a different ministry/agency/organisation, this was not followed. Only returns that were pages within the website being searched were scrutinised. The websites were also hand searched for relevant webpages. The hand search relied on the website's menu items to navigate to pages that might have content related to fats and oils.

3.2.1.b. Rapid literature review of international reviews

We conducted a rapid systematic review of reviews published from 2013 that considered how other nations (particularly those with similar politico-economic systems to Australia, such as OECD countries, and those showing international leadership in public health nutrition, such as

Brazil) approach and refer to 'healthy' and 'unhealthy' fats and oils. The aim was to identify any key learnings around implementation of messages that might be applicable to the Australian context. In addition, relevant evidence from the DFaD review [1, 2] related to the interpretation of 'healthy' and 'unhealthy' fats and oils was considered.

3.2.1.1 Research questions

For this rapid literature review of reviews the PICO-T question was:

- P = Australian (and similar (OECD) populations) (all gender/sex groups; consumers)
- I = Dietary guidance around ('healthy' and 'unhealthy') fats and oils (as nutrients, ingredients, food components and foods) based on evidence of effect of consumption on health outcomes
- C = No dietary guidance around fats and oils
- O = Consumer understanding of messaging (and any recommendations as a consequence of this)
- T = from January 2013

Primary question: How are countries, including Australia and those comparable to Australia, messaging 'healthy' and 'unhealthy' fats and oils for application in nutrition policy actions to influence consumer intake?

Secondary question: In these countries, where there has been evaluation of consumer understanding of such messaging, what are the reported outcomes, strengths and limitations of the approaches taken to enhance consumer understanding and selection of 'healthy' fats and oils?

3.2.1.2 Search strategy

The detailed search and data extraction strategy is included at Appendix 1.

3.2.2 Extraction, synthesis and analysis of data

As fats and oils can be foods (e.g. oils and spreads) and/or components (e.g. fat on meat) and/or ingredients of foods (e.g. 'hidden' fats in discretionary foods) consideration was given to messaging and perception around fats and oils in terms of nutrients (fatty acids), foods and/or dietary patterns. For example, different 'fats and oils' were considered as components of:

- healthy fat allowance oils in the ADGs (e.g. poly-unsaturated and/or mono-unsaturated oils such as olive oil, canola, sunflower, safflower) and spreads (e.g. poly-unsaturated and/or mono-unsaturated margarine) or the seeds and nuts from which they are derived
- unhealthy fats and oils (e.g. fats and oils high in saturated fats, such as palm oil, coconut oil, butter, cream) identified as discretionary foods in the ADGs
- fats in discretionary foods that cannot be separated out of the product (e.g. pastries, cakes, biscuits, processed meats)
- unsaturated fats in foods in the healthy five food groups (e.g. healthy fats found in fish, avocados, nuts and seeds)

- saturated fats (usually invisible) found in healthy foods (e.g. milk, cheese, yoghurt)
- saturated fats visible on healthy foods that could/should be removed before eating (e.g. fat on meat).

3.2.3 Consideration of alignment of messaging

The evidence findings (resulting from the searches and data extraction and analysis processes described in 3.2.1 and 3.2.2) were scrutinised to identify opportunities to align messaging on fats and oils to minimise any identified gaps in consumer understanding and support promotion of healthy eating patterns.

This evidence informed formulation of advice regarding future approaches to enhancing consumer understanding of fats and oils, including FSANZ labelling of foods containing fats, and future review of the ADGs.

3.3 Reporting process

The findings, covering all sections above, were written as a draft report and submitted to the NHMRC for comment. All feedback was considered in the final report.

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4 Results

4.1 Review of key Australian government nutrition resources to identify key messages re fats and oils

4.1.1 Background context of the ADGs documents and resources

The relationship between the documents and resources in the ADGs Eat for Health program [4] is explained in the ADGs Educator Guide as extracted in Figure 1 [3]. In developing the ADGs, the NHMRC drew upon the following five key sources of evidence:

- The previous series of dietary guidelines and their supporting documentation [10-12].
- The Evidence Report of systematic reviews of food, diet and health relationships [13], which addresses targeted questions published in the peer-reviewed nutrition literature from 2002–2009, including systematic review of the relationships between different types of fats and oils, and the foods containing these in the diet and health outcomes.
- The Nutrient Reference Values for Australia and New Zealand document [6], which details quantitative NRVs for different ages and genders. In the context of fats, the NRVs detail the recommended amounts of total fat and fatty acids required to avoid deficiency, toxicity and some diet-related chronic diseases.
- The Food Modelling System [14], which describes a range of computer-generated diets that translate the NRVs into dietary patterns to describe some types, combinations and amounts of foods that can deliver nutrient requirements for each age and gender group of different height and activity levels in the Australian population. A range of models including omnivore, lacto-ovo vegetarian, pasta and rice-based dietary patterns were developed, and primarily omnivorous dietary patterns were used to inform the Australian Guide to Healthy Eating and companion resources.
- Key authoritative government reports and additional literature (including those provided during public consultations [15] and a commissioned literature review on pregnant and breastfeeding women) [16].

The ADGs, together with the underlying evidence base, provide guidance on foods, food groups and dietary patterns that protect against chronic disease and provide the nutrients required for optimal health and wellbeing. The ADGs aim to promote the benefits of healthy eating, not only to reduce the risk of diet-related disease but also to improve community health and wellbeing. The ADGs aim to be food based, that is to provide dietary advice based on the scientific evidence of foods, dietary patterns and health relationships. Nutrient-based recommendations are provided in the NRV Document [6].

Figure 1 The relationship between the documents and resources in the ADGs Eat for Health program [3]

Evidence products	Guidelines	Health professional resources	Consumer resources
Evidence Report (2011)	<i>Australian Dietary Guidelines</i> (2013)	<i>Australian Dietary Guidelines</i>	<i>Australian Guide to Healthy Eating</i> (Food Modelling Tool)
Food Modelling System (2011)	<i>Infant Feeding Guidelines</i> (2012)	<i>Infant Feeding Guidelines</i>	Summary booklet for the <i>Australian Dietary Guidelines</i>
Pregnant and Breastfeeding Literature Review (2012)		<i>Australian Guide to Healthy Eating</i> (Food Modelling Tool)	Summary booklet for the Infant Feeding Guidelines
Infant Feeding Guidelines Literature Review (2012)		Educator's guide	Brochures for infants, children, pregnant women and adults
2003 edition of the Dietary Guidelines (rescinded)		Summary booklet for the <i>Australian dietary guidelines</i>	Posters
		Summary booklet for the Infant Feeding Guidelines	Interactive web tools
		Brochures for infants, children, pregnant women and adults	Healthy eating information such as fact pages and tips
		Posters	
		Interactive web tools	
		Healthy eating information such as fact pages and tips	

The target audience for the ADGs is very broad and comprises health professionals (including dietitians, nutritionists, general practitioners (GPs), nurses and lactation consultants), educators, government policy makers, the food industry, consumers and other interested groups. Each group is likely to have different requirements and expectations of dietary guidance, including specific preference/utility of food-based and/or nutrient-based dietary guidance.

The scope of the ADGs is that they apply to all healthy Australians. They are intended for people of all ages and backgrounds in the general healthy population, including people with common diet-related risk factors such as being overweight. However, the Guidelines do not apply to people with medical conditions requiring specialised dietary advice, such as those with cardiovascular disease, or to frail elderly people who are at risk of malnutrition.

4.1.2 Australian Dietary Guidelines (2013) messaging re fats and oils

The results of extraction of guidance and messaging pertaining to fats and oils in the key documents of the ADGs (2013) suite of publications and affiliated resources are detailed in Appendix 2.

The results were scrutinised for key messages, context and consistency across documents and resources, as captured in the identified context and gaps column in the table in Appendix 2 and summarised here. Consideration of context included identification of the evidence underlying guidance from the five key sources listed above (section 4.1.1).

The results identified messaging around 'fats and oils' in three main areas: foods, nutrients (fatty acids) and dietary patterns. This reflects the complexity of the terminology of 'fats and oils', which pertains to foods (such as oils and spreads) and/or components of foods (such as visible fat on

meat) and/or ingredients in foods (including 'hidden' fats in both five food group and discretionary foods) and/or nutrients (such as different types and groupings of fatty acids) (Appendix 2).

Messaging around 'what' to do, is combined frequently with messaging around 'why'. This is particularly the case with ADGs Guideline 3, which targets foods and drinks to limit for health benefit; it is in the relevant section (Chapter 3) of the ADGs that the evidence for 'limit intake of foods high in saturated fat' is presented (Appendix 2).

In contrast, in Guideline 1, which is focussed on achieving and maintaining a healthy weight, the emphasis is more on total fat intake, given its energy density and contribution to kilojoule intake. The third area where messaging around 'fats and oils' is featured in the ADGs suite of publications and resources, is regarding the allowance for unsaturated spreads and oils in the *Australian Guide to Healthy Eating* (AGTHE). Additionally, Guideline 2, which encourages enjoyment of a wide variety of nutritious foods from the five food groups, also includes specific messaging around fats in the context of milk, yoghurt and cheese. The results of extraction of guidance and messaging pertaining to fats and oils in each area are presented below.

Compared to previous ADGs, the current ADGs 2013 reflect the evidence base outlined in the evidence review [13] and other authoritative reports, such as from the World Health Organization [17] that de-emphasises restriction of all dietary fats and focuses on limiting intake of foods and drinks high in saturated fats and trans fats⁶ (Appendix 2). However, there are some exceptions in messaging. For example, under Guideline 1: Practical considerations achieving and maintaining a healthy weight (ADGs, p22), there is a suggestion to consume nutrient-dense foods of lower energy density that are low in total fat (not just saturated fat) (Appendix 2). (More information is provided in section 4.1.2.2.)

Some variations in terminology in the ADGs documents merely reflect the range of different technical nutrient names used for different types of fats/fatty acids internationally.

Foods are often described as being either 'high in' or having a 'significant' amount of, or being 'relatively low in' various types of fat (total, and/or fatty acids). It is not clear quantitatively what such relative terms mean and, as seen in the DFaD reviews, they likely mean different things to different target groups. On a related point, several glossary entries, such as the definition of a low fat food, reflect regulations in the Food Standards Code [18], for example, those developed to inform food labelling initiatives as found in Phase 2 of the DFaD review [2].

4.1.2.1 Messaging of 'fats and oils' in the context of Guideline 3

Guideline 3 states "Limit intake of foods containing saturated fat, added salt, added sugars and alcohol". It covers 'discretionary' foods and drinks. Although this term is not used in the relevant sections of ADGs document itself, it does appear in the Educator's Guide [5] and in relevant consumer resources in the context of Guideline 3.

Guideline 3 advises that intake of foods and drinks containing added sugar, salt and alcohol should be limited. In the context of 'fats and oils' it also encourages the Australian population to "limit intake of *foods high in saturated fat* such as many biscuits, cakes, pastries, pies, processed

⁶ Trans fats are mentioned to a much lesser extent than saturated fats in the ADGs 2013 documents and resources

meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks” and “*replace high fat foods which contain predominantly saturated fats*, such as butter, cream, cooking margarine, coconut and palm oil, with foods which contain predominantly polyunsaturated and monounsaturated fats, such as oils, spreads, nut butters/pastes and avocado”, and notes that “low fat diets are not suitable for children under the age of 2 years”.

Guideline 3 appears in the ADGs in the format in Box 1. The messaging around foods high in saturated fats are provided as Guideline 3a. The wording reflects the evidence base at the time, but more detail may be required for some foods, particularly full fat milk products. Rationale for the different dot-point levels of the messaging around foods containing saturated fat or those foods (e.g. margarines and oils such as coconut or palm oils) that are predominantly saturated fat is not clear.

Box 1. ADGs Guideline 3

Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.

- a. Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
 - Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
 - Low fat diets are not suitable for children under the age of 2 years.
- b. Limit intake of foods and drinks containing added salt.
 - Read labels to choose lower sodium options among similar foods.
 - Do not add salt to foods in cooking or at the table.
- c. Limit intake of foods and drinks containing added sugars such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks.
- d. If you choose to drink alcohol, limit intake. For women who are pregnant, planning a pregnancy or breastfeeding, not drinking alcohol is the safest option.

The specific lists of food examples provide very clear practical guidance around which foods should be limited. However, the overarching heading, while clearly identifying that ‘foods’ are the subject of this guidance, does include strong reference to saturated fat as a nutrient.

This potentially confuses dietary guidance around foods and drinks to limit with the potential mechanism behind the food, diet and health relationships on which the guidance is based, and could be confusing for some consumers, as full understanding of the messaging potentially relies on adequate nutrient-based nutrition knowledge.

As noted in Appendix 2, the evidence for ‘limit intake of foods high in saturated fat’ is presented in detail in the ADGs [3]. Two nutrient-based statements based on the information in the NRVs [6] were accepted as established evidence:

- Saturated fat is the strongest dietary determinant of plasma LDL concentration.
- Replacing saturated fat with polyunsaturated and monounsaturated fats is associated with improved blood lipids related to CVD.

Other evidence statements informing ADGs messaging around fats and oils in Guideline 3 were based on the systematic reviews [13]. Given terminology issues, as the review search terms included “fats” and “oils” as foods, the results also included studies around fats as nutrients as well as foods, and the evidence review [13] includes several more nutrient-based findings of dietary relationships with cardiovascular disease, type 2 diabetes, excess weight gain, hypertension, cancer and dementia, which are more relevant to the NRVs than the ADGs. Most focused on the effects of omega-3 fatty acids on markers of cardiovascular health, with only one identified review focused on the proportions of dietary fatty acids in the overall diet [19]. Results of that review [19] confirmed that replacing saturated fatty acids with unsaturated fatty acids may reduce the risk of coronary heart disease and this was also supported by the findings of other authoritative reports [20, 21]. This review also found that replacing trans fats with unsaturated fats improves blood cholesterol levels [19]. From a whole-of-diet perspective, this review found that reducing the risk of cardiovascular disease by replacing saturated fats with carbohydrate (as is the case in some low fat diets) depends on the effects on body weight [19].

The systematic review found evidence suggesting that higher consumption of omega-3 LCPUFAs is associated with a reduced risk of dementia (Grade C). Otherwise the systematic reviews found inconclusive evidence, or evidence of a lack of association, between the amount and type of fats as nutrients and other disease outcomes; however some positive relationships were described in other authoritative reports internationally [3].

The ADGs relied on a report by FSANZ [22] to state that “intake of trans fats is low in Australia and consequently there is no specific recommendation to limit their intake compared to current intake” but goes on to state “However, it is important to ensure that intake remains at its current low level” [3].

With respect to excess weight gain, the ADGs state that “Dietary fat provides a substantial amount of energy (kilojoules) per gram but total dietary energy is the variable that affects weight. Reducing the amount of dietary fat will not necessarily reduce dietary energy, but it is prudent to choose low fat and low energy-density foods in a total dietary pattern that seeks to control overall energy intake. Because of this total energy effect, there are difficulties in appraising research into the effect of dietary fat alone on weight gain [23].” [3].

The ADGs note “The Guidelines recommend some caution in choosing foods high in fat (in particular saturated fat) because of the implications for weight management and cardiovascular disease risk. Fat-rich foods are energy (kilojoule) dense, heightening the risk of excess energy intake [23] as shown by dietary modelling [14]. Additionally, there is ample evidence of the relationship between dietary patterns and disease risk at the population level [24]. Fat content is an important component of dietary quality and it may be that the evidence for limiting saturated fat in the diet is best considered from a whole-of-diet perspective, with additional reference to overall nutritional quality.”

The ADGs Educator Guide [5] provides very detailed lists of foods and drinks that are high in saturated fat, and also high in both saturated fat and added sugars (Appendix 2).

Neither these lists nor the wording of Guideline 3 mention the food group ‘milk, yoghurt and cheese’ specifically. Therefore, this guideline does not appear to have considered that the systematic reviews presented in the Evidence Report [13] found that consumption of milk and decreased risk of heart disease and some cancers, *irrespective of the fat content of the milk*.

Throughout the range of ADGs documents and resources, the wording of Guideline 3 usually is reflected accurately. However there are a few examples, most notably in the more practical resources provided on the website or in brochures, which target specific population groups, such as pregnant women, where the term 'saturated fat' in the first phrase of the guideline has been replaced by total 'fat' (Appendix 2).

4.1.2.2 Messaging of 'fats and oils' in the context of Guideline 1

While no specific wording related to fats and oils appears in Guideline 1, which is around achieving and maintaining a healthy weight, the emphasis of this guideline is on choosing amounts of nutritious food and drinks to meet energy needs. Hence, it is underscored by a focus on energy density of foods, and explains the underlying mechanisms of this physiologically with a focus on macronutrients, rather than foods. Fats have the highest energy density of all macronutrients (37.7 kJ per gram), more than double that of protein or carbohydrate. Therefore, the information provided in support of this guideline includes a greater focus on intake of total fats (including saturated and unsaturated fats) than type or groups of fatty acids given their equal energy density and contribution to kilojoule intake.

4.1.2.3 Messaging of 'fats and oils' in the context of the unsaturated fat allowance

In the *Australian Guide to Healthy Eating* an allowance is included for unsaturated spreads and oils consistent with the evidence in the modelling report [14]. These allowances specifically refer to those foods that contain predominantly polyunsaturated and monounsaturated fats such as oils and spreads (that is, margarines). While the intention appears to be to take a food-based approach to describing these foods, the emphasis on the type of fatty acids they contain tends to undermine this intent.

These oils and spreads are those that ADGs Guideline 3 recommends replace high fat foods that contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil (see section 4.1.2.1). This group also includes the nuts and seeds from which the oils and spreads are derived [5, 14]. However, the latter foods are included in this group inconsistently throughout the ADGs documents and resources (Appendix 2). Additionally, nut butters/pastes are inconsistently identified as belonging to this group. Another inconsistency in messaging is that Guideline 3 lists avocados as belonging to this group, whereas avocados are more frequently identified as belonging to the fruit group in ADGs resources. Categorisation of foods in more than one food group is justifiable, and also occurs with nuts, seeds and legumes. Some ADGs resources such as the Educator Guide [5] list the types of seeds and nuts from which these oils and fats are derived, such as sunflower, safflower, soybean, cottonseed, sesame, corn and grapeseed (which contain predominantly polyunsaturated fatty acids) and canola, macadamia, peanut, rice bran and olive (which contain predominantly monounsaturated fatty acids) to support more food-based messaging. A few resources refer to this group as the 'healthy fats' group, and also list oily fish and other foods from the five food groups, such as grass-fed meat, legumes/beans and oats as being good sources of healthy fats. The website and Educator Guide also provide more detailed background on some specific fatty acids, informed by the NRV document [6], which could be useful for more professional and technical stakeholders.

4.1.2.4 Messaging of 'fats and oils' in the context of Guideline 2

Guideline 2 (Box 2) which encourages enjoyment of a wide variety of nutritious foods from the five food groups, includes specific messaging around choosing mostly reduced fat options of milk, yoghurt and cheese.

Box 2. ADGs Guideline 2

Enjoy a wide variety of nutritious foods from these five groups every day:

- Plenty of vegetables, including different types and colours, and legumes/beans
- Fruit
- Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties, such as bread, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley
- Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
- Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under 2 years).

And drink plenty of water.

However, the source of evidence behind such guidance is not clear in the ADGs, given the systematic reviews presented in the evidence report [13] found that consumption of milk and decreased risk of heart disease and some cancers, *irrespective* of the fat content of the milk. In fact, the only evidence that informs enjoyment of preferably reduced fat milk, yoghurt, cheese and/or their alternatives in Guideline 2 is from the modelling system [14] (see below), not the evidence review [13].

The relevant evidence statements and grades from the systematic reviews detailed in the evidence report [13] are listed in Table 2.13 of the ADGs [3] and included below:

- Consumption of at least two serves per day of dairy foods (milk, yoghurt, and cheese) is associated with reduced risk of ischemic heart disease and myocardial infarction. (B)
- Consumption of two or more serves of dairy foods per day is associated with reduced risk of stroke. (B)
- Consumption of more than one serve of dairy foods per day, especially milk, is associated with a reduced risk of colorectal cancer. (B)
- Consumption of three or more serves of milk per day is not associated with risk of renal cell cancer. (B)
- Consumption of three serves of any milk, cheese or yoghurt products a day is associated with reduced risk of hypertension. (C)
- Consumption of two to four serves of dairy foods per day is associated with reduced risk of metabolic syndrome. (C)

The only evidence statement that refers specifically to low fat milk, yoghurt or cheese is:

- Consumption of three serves of low fat dairy foods is associated with reduced risk of hypertension. (B)

The modelling system document [14] explains that, in order for the linear modelling program to develop dietary patterns which include sufficient quantities of all healthy foods consistent with the evidence report [13] within the energy constraints of Australian diets (in the context of sedentary behaviours and the need to achieve and maintain a healthy weight), reduced fat milk, yoghurt and cheese options are selected preferentially, as these provide the same health benefits for relatively less kilojoules. Hence, selection of reduced fat milk products essentially 'frees up' more energy in the overall diet to accommodate other healthy foods. Regular or 'full fat' are not less healthy *per se* than reduced fat options. Food classification systems that discriminate against regular/'full fat' milk, yoghurt or cheese or their plant-based alternatives, do so on the evidence derived from modelling dietary patterns, not on the basis of the food *per se*.

4.1.2.5 Minor variations in messaging around 'fats and oils' in the ADGs documents and resources

Some relatively minor variations in messaging were identified in the ADGs publications and resources. Some of these appear to have arisen from attempts to target guidance to particular population groups, or through the application of synonyms to help reduce repetition. Some of these are explained in the Glossary. Conversely, some detailed definitions included in the Glossary did not align fully with the wording within the publications; this occurred rarely, but was most common around Guideline 3, where some, but not all, glossary entries included the word "added" before "saturated fat", and some omitted the word "saturated" in the definition of discretionary foods (Appendix 2).

Visible and invisible fat in foods and drinks are described in the Glossary, but these terms are not used within the main body of the guidelines.⁷

Throughout the ADGs documents and resources there is some variation in use of the term low fat and reduced fat, particularly pertaining to milk, yoghurt and cheese; this could affect understanding of guidance around specific foods such as skim milk, or reduced fat milk (2% fat), which could be addressed by greater specificity and consistency.

Documents and resources varied in their provision of detailed lists of foods to illustrate particular guidance. Examples included lack of provision of examples of vegetables canned in different types of oils/sauces, such as artichokes in olive oil (oil high in unsaturated fatty acids) or mushrooms in cream sauce (sauce high in saturated fatty acids).

The terms fatty acids and fats were occasionally used interchangeably when referring to fatty acids. However, detailed information about fatty acids is usually provided as background, rather than in dietary guidance messaging *per se*. Many of these variations are covered by entries in the Glossaries. However, several documents use the terms 'unsaturated' and 'polyunsaturated' and 'monounsaturated' interchangeably without consistent explanation.

While the international evidence supported inclusion of guidance to discourage consumption of foods potentially high in trans fats, relative to saturated fats, trans fats were mentioned rarely in the ADGs documents. This was based on advice from FSANZ that trans fats are not a problem in the Australian food supply.

⁷ However, they may have some utility to assist with messaging around food consumption.

Although the serve size descriptors do include practical measures like teaspoons, the AGTHE tables only provide serve sizes in grams.

Sometimes the evidence base itself produced apparent inconsistencies. For example, due to their relatively high energy and nutrient requirements, low fat diets are not recommended for infants and children under 2 years of age. Neither is reduced fat milk recommended as a complete milk drink for infants or children under 2 years of age. So dietary messaging for these groups may sometimes appear to be inconsistent with those of other age groups. However this reflects the evidence base, rather than any inconsistencies.

Such evidence contributed to the changed emphasis of the 2013 ADGs, which focused more on encouraging reduction in intake of foods containing saturated fat, than an overall reduction in total fat intake that had been emphasised in previous dietary guidelines [3].

4.2. Review of fats and oils messaging in other Australian grey literature

The search of websites for specific dietary messaging around fats and oils published since completion of the FSANZ report [8] identified relevant guidance and position papers from the Heart Foundation (HF), but relatively little recent information about fats and oils from other key non-government organisations, professional organisations or key food industry commodity groups.

A synthesis of messaging regarding fats and oils in HF content and resources is presented in section 4.2.1, and a synthesis of messaging by other organisations in Australia is in section 4.2.2.

No messaging around fats and oils and environmental sustainability was identified in the review, except for the Public Health Association of Australia's position on palm oil.

4.2.1 The Heart Foundation's dietary messaging around fats and oils

The Heart Foundation (HF) in Australia publishes a range of position statements and underlying evidence briefs on various food groups and nutrients and their relationship with cardiovascular health, underscored by the Heart Foundation's heart-healthy eating principles [25]. These principles are included in Box 3 and are consistent with the ADGs for the general population, but also include messaging for those with clinical cardiovascular conditions.

Box 3. The Heart Foundation's heart-healthy eating principles

The Heart Foundation's heart-healthy eating principles:

1. Plenty of vegetables, fruits and wholegrains
2. A variety of healthy protein sources especially fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If choosing red meat, make sure the meat is lean and limit to 1-3 times a week.
3. Milk, yoghurt and cheese, preferably unflavoured. Those with high blood cholesterol should choose reduced fat varieties.
4. Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking
5. Herbs and spices to flavour foods, instead of adding salt

The HF published revised position statements on “dairy” foods, “meat”, “eggs” and “heart healthy eating” in late 2019 [7]. Details are provided in Appendix 3 and summarised in Table 3. The position statements for “dairy” and “eggs” are informed by a summary of the evidence provided in companion documents [26, 27]. The position statement on ‘meat’ is informed by a review of animal sources protein (specifically meat and poultry) produced for the HF in 2018 [28].

4.2.1.1. Regarding dairy foods and heart-healthy eating the HF details five quite complex recommendations and includes messaging both around nutrients (i.e. both protein and fat) and food choices (e.g. fish) (Box 4). The messaging specifically notes that recommendations for consumption of milk, yoghurt and cheese are regardless of their fat content or modification. However, the third point privileges fat sources from foods “such as fish, olives, seeds, nuts and oils made from them”, and the fourth point implies that milk, yoghurt and cheese may only be part of healthy eating patterns when consumed with other foods (specifically vegetables, wholegrains or fruit). Hence, some of the detailed messages may be perceived as being potentially contradictory.

Box 4. The Heart Foundation’s recommendations for Dairy and Heart Healthy Eating

Based on the evidence for dietary patterns, dairy foods and cardiovascular health outcomes, the Heart Foundation recommends:

1. Rather than focusing on individual nutrients or foods, we encourage Australians to follow the Heart Foundation’s Heart Healthy Eating Principles (see Box 3).
2. Milk, yoghurt and cheese (regardless of fat modification) can feature in a healthy eating pattern; as long as foods such as fish, olives, seeds, nuts and oils made from them are the primary sources of fat.
3. Milk, yoghurt, and cheese are healthy snack options in preference to discretionary foods and can contribute to healthy meals when eaten with vegetables, wholegrains or fruit.
4. For those people who would benefit from LDL-C lowering dietary interventions, including those with elevated LDL-C and those with existing coronary heart disease, reduced fat and unflavoured products are the preferred choices due to the LDL-C increasing nature of dairy fat and to limit added sugar intake.
5. The evidence for milk, yoghurt and cheese does not extend to butter, cream, ice-cream and dairy-based desserts; products which should be avoided in a heart healthy eating pattern. Butter intake should be limited, in preference to oils rich in monounsaturated fats (i.e. olive oil) especially for those with dyslipidaemia.

4.2.1.2 Regarding “meat” and heart-healthy eating the HF details another five recommendations, this time with a stronger focus on foods, rather than nutrients, but with use of the concept of “protein foods” to describe the “lean meat, poultry, fish, eggs and alternatives including legumes” used in the ADGs (Box 5). The HF’s definition of meat includes both red meat and poultry. The detailed recommendations are clear that consumption of processed meat should be avoided. The HF provides a mix of qualitative and quantitative messaging, with the latter focused on recommendations to consume less than 350g of unprocessed red meat per week. Point 3 implies that meat may only be part of healthy eating patterns when consumed with other foods (specifically vegetables and wholegrains, and when healthy oils are used); however,

this may be ambiguous to some consumers, especially as examples of healthy oils are not provided.

Box 5. The Heart Foundation's recommendations for "meat" and heart-healthy eating

Based on the evidence for dietary patterns, unprocessed meats and poultry, and cardiovascular health outcomes, the Heart Foundation recommends:

1. Rather than focusing on individual nutrients or foods, we encourage Australians to follow the Heart Foundation's Heart Healthy Eating Principles (see Box 3).
2. Unprocessed meat and chicken can be included along with other sources of healthy proteins as part of a healthy eating pattern; but preference is for fish and legumes as the beneficial sources of protein.
3. Less than 350g per week of unprocessed red meat can be included in a heart healthy eating pattern; if chosen 1-3 meat-based meals per week can contribute to healthy meals when eaten with vegetables, wholegrains and when healthy oils are used.
4. Chicken, preferably with the skin removed, can be included in a heart healthy eating pattern as part of a wide variety of other protein foods (legumes, seafood and fish, eggs, nuts, dairy) across the week.
5. The evidence for unprocessed red meat and poultry does not extend to processed meat products. These foods are consistently linked to adverse health outcomes, and are not included in a heart healthy eating pattern. Their intake should be avoided.

4.2.1.3. Regarding "eggs" and heart-healthy eating the HF details another five recommendations, with a mix of food-based and nutrient-based messaging, and also includes specific advice for those with diabetes as well as cardiovascular disease (Box 6).

Box 6. The Heart Foundation's recommendations for "eggs" and heart-healthy eating

Based on the evidence for dietary patterns, eggs and cardiovascular health outcomes, the Heart Foundation recommends:

1. Rather than focusing on individual nutrients or foods, we encourage Australians to follow the Heart Foundation's Heart Healthy Eating Principles (see Box 3).
2. Eggs can be included as part of a heart healthy eating pattern, and can be chosen as one of a variety of protein foods including fish and seafood, legumes, nuts and seeds, and poultry in preference to unprocessed red meat.
3. Eggs are a healthy snack option in preference to discretionary foods and can contribute to healthy meals when eaten with vegetables, wholegrains, and poached or prepared with healthy oils.
4. People with Type 2 Diabetes Mellitus should limit their consumption of eggs to 7 per week due to the greater risk associated with developing cardiovascular disease.
5. People with cardiovascular disease who require LDL-C lowering interventions should limit their consumption of eggs to 7 per week due to the LDL-C raising effect of eggs.

4.2.2 Dietary messaging around fats and oils by other organisations in Australia

The search of websites for specific dietary messaging around fats and oils published since the development of the FSANZ report [8] identified guidance and statements that are extracted in Appendix 4. Most of the information around dietary guidance on websites of non-government organisations (such as the Cancer Council and Diabetes Australia) and professional organisations (such as the Public Health Association of Australia, the Dietitian's Association of Australia and the Australian Medical Association) was centred on the ADGs or on dietary messaging consistent with the recommendations of the ADGs. As was seen with the HF, non-government organisations focussing on specific diseases, such as the Cancer Council and Diabetes Australia, also provided more clinical dietary messaging for those at high risk of, or already managing, such conditions.

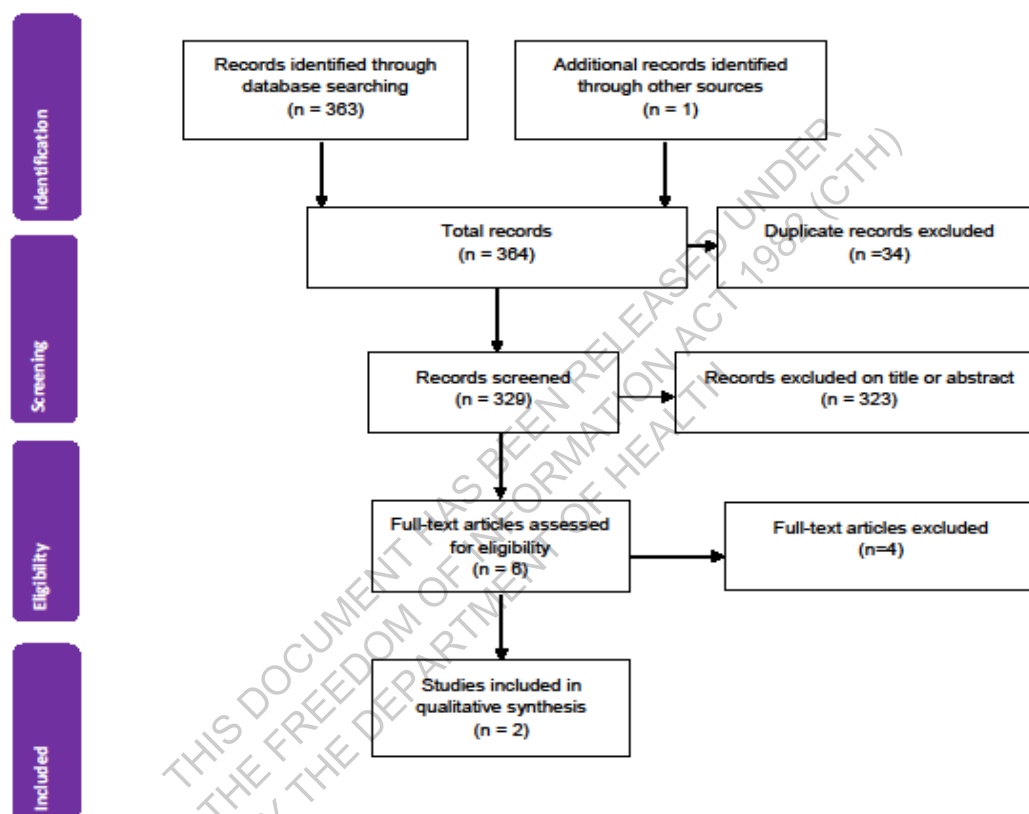
Key food industry commodity groups (including Dairy Australia, Meat and Livestock Australia (MLA), Australian Eggs and Growcom) and umbrella organisations such as the Australian Food and Grocery Council tended to promote the products of member organisations in the context of the ADGs 2013, but with a few exceptions, did not accurately detail ADGs messaging, as described in the two phases of the DFaD review [1, 2]. Such messaging did not generally refer to fats and oils in the context of the foods or drinks being promoted but tended to feature selected nutrients. Higher order messaging such as "[specified food] is part of a healthy diet" was most common on food industry websites.

Most websites and webpages of the of the jurisdictional Departments of Health were consistent with ADGs messaging [1]. This was the case mostly with the websites administered by the Australian Government Department of Health, including the Healthy Weight Guide website (www.healthyweight.health.gov.au). However the information on the Health Star Rating website (<http://www.healthstarrating.gov.au>) is strongly nutrient-focused [1, 2], and so is not always consistent with the food-based and dietary pattern messaging of the ADGs. This is particularly the case for milk of different fat content [2]. Similarly the relevant pages of the FSANZ website are focused on aspects of the Food Standards Code which are predominantly nutrient-focused; therefore messaging on this website is not always consistent with the ADGs [1, 2].

4.3 Results of the rapid literature review of reviews on the approach and any learnings around messaging and interpretation of fats and oils messaging, including consumer understanding

The PRISMA flowchart of the systematic rapid literature review of reviews is included at Figure 2. The search strategy identified two reviews [8, 9] that qualified for inclusion from 363 non-duplicated documents identified by the search terms and an unpublished review provided by the NHMRC for consideration for inclusion [8].

Figure 2 PRISMA diagram for the systematic rapid review of reviews



The 2017 FSA NZ literature review follows a systematic approach and was undertaken to uncover evidence in Australia and New Zealand and internationally regarding consumer understanding and behaviours around fats and oils [8]. It was included in agenda papers for the June 2018 meeting of the Australia and New Zealand Ministerial Forum on Food Regulation (Agenda item 3.8, Attachment 1.2), but has not been published and is not publicly available. The FSA NZ review identified 70 studies from 2,576 non-duplicated documents published between January 2003 and August 2017. Only 23 (33%) of these papers were published between 2013 and 2017 (i.e. after the 2013 release of the current ADGs) and only 11 papers (16%) did not have a focus on labelling of food packaging. The FSA NZ systematic review is of moderate quality, as greater

detail could be expected to aid evaluation. However, most of the 11 non-food labelling studies included in the review were classified as low in quality.

Relevant data were extracted and tabulated (Appendix 5). Given that the majority of the included literature was international and predates the release of the current ADGs in 2013, the FSANZ review provides limited insights into current Australian consumer knowledge, understanding and behaviours associated with fats and oils; the findings tend to reflect impacts of international dietary messaging around fats and oils which has changed over time, rather than reflect response to ADGs 2013 messaging. The review considers three main areas:

- consumer understanding and behaviours regarding fats and oils
- consumer understanding regarding the content of fats and oils in foods, and
- consumer understanding and use of fats and oils information on food labels.

Given the dominance of papers on food labelling included, this was a major focus of the FSANZ review [8]. However this topic was out-of-scope of the current review. Relevant detailed findings of the first two areas listed above are presented in table format in Appendix 5 and in text in section 4.3.1.

The 2017 manuscript by Liu et al [9], which was also included in the FSANZ literature review [8], is a narrative review in case study format, of predominantly US-based history of dietary fat science and recommendations. It summarises presentations from a 2015 US Experimental Biology Symposium that addressed techniques for effective scientific communication. Hence the review is of low quality. The symposium was sponsored by the avocado industry.

The review outlines the changing scientific evidence of the impact of different fats on health over time in the US, as reflected in peak US bodies moving away from setting nutrient-based recommendations towards the 'new' science of food-based recommendations. The review cites consumer confusion around scientific terminology of fats and fatty acids and nutrient-based targets as rationale for the need to adopt a more food-based approach to dietary guidance in the US. Detailed findings of the review are tabulated in Appendix 5 and presented in section 4.3.1.

Both reviews included research that focused on fats, rather than oils. This could be expected given the strong nutrient-based focus, and was also considered by FSANZ to reflect the inclusion of oil into the broader term of fat (and types of fat) in major nutrition label initiatives, such as the Nutrition Information Panel (NIP) in Australia and New Zealand [8].

The vast majority of included papers in the two reviews defined or interpreted "consumers" as members of the general public, rather than other stakeholder groups such as health professionals, educators, regulators, industry groups or decision makers. Accordingly, in this section and in the Discussion and Conclusions, the word "consumer" predominantly refers to members of the general public.

4.3.1 Findings of the rapid literature review

4.3.1.1 Summary of results of the FSANZ review

The FSANZ literature review [8] did not differentiate between literature published before or after the most recent review of the ADGs 2013 [3], and it can be challenging to identify the form and wording of messaging specifically being investigated in that review (Appendix 5). The 2017 manuscript by Liu et al [9] was included in the FSANZ review [8] and covers most of the

international evidence included in the former (Appendix 5). Hence the findings of both reviews are considered here together.

The reports present information that has a very strong focus, particularly initially, on fats as nutrients, and knowledge of different types of fats, related nomenclature and perceived healthiness of different fatty acids and groups of fatty acids. One section of the FSANZ review aims to investigate consumer understanding regarding the content of fats and oils in food. However, similarly to Liu et al (2017) this identifies literature that focuses almost entirely on specific knowledge and perception of nutrient composition of foods that are predominantly fats, such as butter and margarine, or on selected food sources of particular fats, notably oily fish and omega 3 fatty acids and milk products and unsaturated fat, rather than consumers understanding of the fat content of a range of foods. The FSANZ report mainly focuses on consumer understanding and use of fats and oils content information on food labels, and the impact of different food label elements on food choices in relation to fats and oils (Appendix 5). Detailed analysis of fats and oils information on food labels is beyond the scope of this current review.

Both the FSANZ report and Liu et al (2017) found that consumers internationally (including in Australia and New Zealand) are concerned about the amount of fat they are consuming. The majority of consumers in the included studies were aware that there are 'healthy' ('good') and 'unhealthy' ('bad') dietary fats and that it is important to consume some fats (i.e. essential fatty acids, although few consumers used such terminology). Understanding and knowledge of more complex dietary fat concepts and the reasons why fats are 'healthy' and 'unhealthy' appeared to be limited. However, these points could be moot, as there was little evidence found in either review that better understanding of 'healthy' and 'unhealthy' fats, or of underlying mechanisms, would lead to improved knowledge of food sources, or dietary behaviour when choosing which foods to consume (Appendix 5).

Particularly in the US, more consumers appeared to understand that omega-3 fatty acids are good for health and were able to identify food sources of the unsaturated fatty acids, but were less familiar with the terminology of the various types of these fatty acids (e.g. eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)).

Consumer understanding of the link between dietary fats and health was mixed. Understanding appeared to be the strongest for saturated fat and health risks, and, as noted above, for omega-3 fatty acids and health benefits. However, it is not clear from the information provided whether consumers understood these different fats to be fatty acids/nutrients or the dominant fatty acids in specific foods (such as, consecutively, butter or fish). Understanding about trans fatty acids (TFAs) and health was mixed across countries, with limited research identified in this area in Australia and New Zealand (Appendix 5).

Many consumers were confused about perceived contradictory and/or changing nutritional advice in relation to fat consumption and health outcomes, and there is evidence that this is aggravated by actual contradictory information [9] although it is not always clear exactly what messaging is contributing to such confusion. While the FSANZ review implied such confusion was the result of dietary guideline messaging, Liu et al suggested that it was more related to challenges around interpreting and acting on nutrient-based messaging [9]. For example, in the US, dietary messaging in 2015 included recommendations to consume no more than 10% of

energy as saturated fat with no suggested target for total fat intake, which was seen to be difficult for consumers to act on [9] (Appendix 5).

Some consumers stated that they were confused also about how much fat they should be eating. Generally, many consumers reported that they had, or intended to reduce intake of fat and/or different types of fats, particularly saturated fats. However, in one survey in the US in 2015, 25% of consumers reported they had reduced intake of *unsaturated fats* for health reasons – which is inconsistent with nutrition evidence and dietary advice to increase unsaturated fats in the diet [9]. Little other international research investigating whether consumers were attempting to increase their intake of polyunsaturated (or monounsaturated) fats was found, and no Australian and New Zealand research was identified on this topic (Appendix 5).

Many consumers ignored, or were less concerned about, total fat or specific fats if the (discretionary) food containing these was considered to be a 'treat' or a 'favourite'. Further, consumers tended to significantly underestimate fat and saturated fat content of unhealthy foods, but were more accurate when assessing fat content of healthy foods. Some consumers also believed that greater quantity of reduced fat products could be consumed than the equivalent full fat product, and some believed, incorrectly, that saturated fat was more 'fattening' than other fats (Appendix 5).

It was reported that some consumers appeared to be relatively knowledgeable identifying which foods contained fat and different (high order) types of fat, but were less confident and accurate when assessing the quantity and quality of fat in dairy foods, restaurant meals or takeaway foods [8].

Of the relevant food labelling findings, fat was reported to be one of the most looked at and used elements of the Nutrition Information Panel (NIP) (or equivalent packaging information about nutrient content); however, when compared with actual use, it was found that consumers tended to over-report their use of such information [8].

4.3.2 Synthesis and analysis of data

Current dietary messaging around fats and oils (as foods or ingredients, components of foods and/or nutrients) and consumer understanding of these messages are synthesised and summarised in Table 3.

Table 3: Current dietary messaging around fats and oils and consumer understanding of these messages

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Identified consumer understanding	Identified context and gaps
Nutrient-based messaging					
1 Messaging around fats (and oils) as fatty acids, groups of fatty acids and different types of fats, with respect to nomenclature, grouping (e.g. saturated, trans, monounsaturated or polyunsaturated), content in different foods and/or health relationships)					
Provided as background and mechanistic information.	Not relevant.	Provided as background information only.	Provided as background information only.	Consumers appear to understand that omega-3 fatty acids are good for health and were able to identify food sources, but were less familiar with the different types of these fatty acids (e.g. eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)) [8] Consumer understanding of the link between intake of fats and health was mixed, but strongest for saturated fat and omega-3 fatty acids. Understanding about trans fatty acids (TFAs) and health was mixed, with limited research in Australia and New Zealand.	Main source of evidence is outlined in the NRV document
Food-based messaging (as foods, ingredients or components of foods/drinks)					
1 Messaging around healthy (unsaturated) 'fats and oils' as foods					
Oils and spreads and/or the nuts and seeds from which they are derived - Predominantly poly-unsaturated: sunflower and safflower seeds, soybeans,	Unsaturated fat allowance.	Recommends "Consume in small amounts" after listing of different food sources of polyunsaturated and monounsaturated fatty acids.	Recommends "healthy fat choices with nuts, seed, avocados, olives and their oils for cooking" (HF).	Consumers appear to understand that some fats and oils are healthier than others, but are less confident about what these are.	The reviews identify that specifying food sources of healthy (monounsaturated and polyunsaturated) fats

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Identified consumer understanding	Identified context and gaps
cottonseeds, sesame, corn, grape seeds, canola seeds, and walnuts. Predominantly mono-unsaturated: nuts, peanuts, rice bran, avocados and olives.					and oils is likely to be useful for consumers.
2 Messaging around 'unhealthy' (saturated) 'fats and oils' as foods					
Unhealthy fats and oils (palm oil, coconut oil, butter, cream, cooking margarine).	Discretionary foods.	"Limit" After listing of different food sources of saturated fatty acids. Also from ADGs Guideline 3 "Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado."	No messaging around definitions, examples or guidance identified.	<ul style="list-style-type: none"> - Consumers appear to understand that some fats and oils are less healthy than others, but are less confident about what these are. - No information about consumers understanding of messages to replace some foods with others on the basis of their type of fat content was identified. 	The reviews identify that specifying food sources of unhealthy fats is likely to be useful for consumers.
3 Messaging around healthy foods that are relatively high in different types of fats					
Fats in healthy five food groups (e.g. healthy fats found in fish, avocados, nuts and seeds, and fat in full cream milk).	5 Food Group foods.	ADGs Guideline 2 (relevant to healthy foods high in fats) - Enjoy - Choose mostly reduced fat milk, yoghurt, cheese and alternatives.	HF Healthy Eating Principles (relevant to healthy foods high in fats). -Include: - A variety of healthy protein sources especially fish and seafood, legumes (such as	Consumers appeared to be relatively good at identifying which foods contained fat and different types of fat; but some Consumers were less confident and accurate at identifying which dairy	The reviews identify that specifying healthy food sources, and also providing guidance on food quantities, is likely to be useful for consumers.

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Identified consumer understanding	Identified context and gaps
			<p>beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. (If choosing red meat, make sure the meat is lean and limit to 1-3 times a week)</p> <p>-Milk, yoghurt and cheese, preferably unflavoured. Those with high blood cholesterol should choose reduced fat varieties.</p> <p>- Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking.</p> <p>- Diabetes Australia provides 9 practical tips to increase intake of foods high in healthy fats, and lists sources.</p>	foods contained fat and different types of fat than most other foods.	
4 Messaging around unhealthy foods that are relatively high in different types of fats					
Invisible fat in discretionary foods that can't be separated easily from the food.	Discretionary foods and drinks i.e. those high in saturated fats.	<p>ADGs Guideline 3 "Limit"</p> <p>Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.</p> <p>• Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking</p>	<p>HF Healthy Eating Principles and meat position statement</p> <p>- Processed meat is not a part of a heart healthy eating pattern and consumption should be limited or avoided</p> <p>- Otherwise relatively silent on limiting intake of unhealthy foods and drinks</p> <p>Egg position statement</p> <p>However, eggs.... are preferred over discretionary foods</p>	<p>-Some consumers ignored, or were less concerned about, total fat or specific fats content of 'unhealthy' foods if the (discretionary) food was seen to be a 'treat' or a 'favourite'.</p> <p>- Consumers tended to significantly underestimate fat and saturated fat content of unhealthy foods, but were more accurate when assessing healthy foods.</p> <p>- Consumers were less confident and accurate at identifying which restaurant meals and takeaway</p>	<p>Little mention of trans fats messaging. In Australia. ADGs includes messaging to limit discretionary foods which include those high in trans fats. The second part of the ADGs recommendation concerns messaging around 'unhealthy' (saturated) 'fats and</p>

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Identified consumer understanding	Identified context and gaps
		margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Low fat diets are not suitable for children under the age of 2 years.	Dairy position statement Milk, yoghurt, and cheese are healthy snack options in preference to discretionary foods Background Mentions healthy diets are low in discretionary food and drinks (i.e. sugary drinks, alcohol and heavily processed foods). - Diabetes Australia provides 11 practical tips to reduce intake of foods high in saturated and trans fats, and lists sources,	foods contained fat and different types of fat than most other foods. - No information about consumers understanding of messages to replace some foods with others on the basis of their type of fat content was identified.	oils' as foods too (see line 3 above).
5 Messaging around unhealthy (saturated) visible fat on healthy foods					
Visible fat on healthy food that should be removed before eating (e.g. fat on meat).	Not well defined.	Inconsistently – Remove visible fat from meat before consuming (No more than 455g lean red meat per week.)	No mention of removing visible fat from meat. (HF recommends no more than 350g unprocessed red meat per week.)	Not available in included reviews.	Messaging is inconsistently conveyed
6 Messaging around fat and total energy intake/nutrient density					
Focuses on energy density, rather than foods.	Guideline 1	In seeking to achieve and maintain a healthy weight it is prudent to choose nutrient-dense foods of lower energy density – that is, those low in total fat, particularly saturated fat, and added sugars in a total dietary pattern that seeks to	Diabetes Australia, recommends following a diet lower in dietary fat, particularly saturated fat.	Across the literature identified in the FSANZ report, most consumers recognised that fat, compared with other macronutrients, had the highest energy content (i.e. calories or kilojoules) per gram. However, some consumers seemed to (incorrectly) believe that saturated fat had a higher energy content, or	Reviews identify messaging around restriction of energy, nutrient-dense and high-fat foods may be difficult to action. Additional guidance is provided under practical considerations in the ADGs.

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Identified consumer understanding	Identified context and gaps
		control overall energy intake. Adults to achieve & maintain a healthy weight - Nutritious foods should be chosen from the five food groups and the unsaturated fat allowance, in amounts consistent with Foundation Diets. Discretionary choices should be limited. Adults to promote weight loss - The Foundation Diets should be adhered to, without discretionary foods or any additional serves of the five food groups.		was more 'fattening', than unsaturated fat. Some consumers also believed that greater quantity of reduced fat products could be consumed than the equivalent full fat product.	Messaging potentially confuses a nutrient-based approach (energy density) with a more food-based approach.
7 Overarching messaging re dietary patterns					
Focuses on habitual dietary patterns rather than specific foods	The AGTHE and ADGs, particularly Guidelines 1, 2 and 3	<i>Enjoy foods</i> from the five food groups, use small amounts of healthy (unsaturated) oils and spreads, and limit intake of discretionary foods and drinks	The HF Heart Healthy Eating Principles [25]	Not available in included reviews	The ADGs and the HF Healthy Eating principles are generally well aligned at whole of population level; however the HF also includes messaging for those with clinical conditions.

5 Discussion

5.1 Contextualisation of results and implications

5.1.1 Challenges in generating epidemiological evidence around consumption of fats and oils and health outcomes

The ADGs [3] note the complexity of nutritional epidemiology concerning dietary fats and health, relevant to generation of the evidence base on which dietary recommendations and messaging is based:

“Scientific evidence on the effect of dietary fat on health comes from studies that address dietary variables in a number of ways. These include whole-of-diet studies examining the proportion of fat in the diet (relative to protein and carbohydrate), the type of fat in the diet (relative to other types of fat), the effects of specific fatty acids in the diet, and the effects of individual foods in which fat is a significant component. For example, studies could examine the effects of:

- *a low fat diet*
- *a diet with a modified dietary fat ratio- for example, a high polyunsaturated : saturated fat ratio*
- *a diet enriched with specific fatty acids (e.g. omega-3 fatty acids) and/or*
- *oils and fats (e.g. olive oil, spreads) in a defined dietary pattern.*

Methodological issues arise when considering the effects of fats and of dietary fat in the total diet. The difficulty in designing studies that address the effect of dietary fat on disease risk is reflected in several recent reviews on the topic [24, 29-32]. It is important to note that inconsistency in results affects the strength of the evidence statements....”. [3]

In addition, epidemiological studies can also examine the effects of different foods/drinks high/low in total fats or specific types of fats in a defined dietary pattern. Such food-based studies are increasing in number, with the increasing practice of moving away from setting nutrient-based recommendations towards the ‘new’ science of food-based recommendations to better facilitate consumer dietary behaviour change, as reported by Liu et al [9]. As has been seen with milk [13, 26], specific foods may have a different effect on health outcomes than predicted on the basis of their (macro) nutrient content (see section 5.1.2).

Further, studies do not always report, let alone control for, confounding variables, such as changes in other macronutrients in the diet (when proportion of one goes down in the diet, the proportion of others must go up) or particularly when confounding may relate to foods/the food matrix itself. For example, few studies control for the different relationships of food sources of specific fats with health outcomes when assessing health effects of dietary fats [9]. One highly relevant example is the lack of studies assessing the health impacts of dietary saturated fats that control for the food sources or food vehicle delivering these nutrients. Indeed, recent apparent findings that intake of saturated fat may be benign or even protective for CVD, can be explained by failure of analysis of those studies to differentiate and control for known ‘protective’ foods/food matrix/vehicles delivering such fats (e.g. milk, yoghurt, cheese) and ‘harmful’ sources e.g. ultra-processed food [9, 33]. This had led to significant controversy, and polarisation of the views of

stakeholders with different levels of nutritional literacy, on optimum intake and proportions of saturated fats, total fats, and other affected macronutrients, particularly carbohydrate, in the literature and social media [1]. Several recent reviews have confirmed the important role of the food matrix in food, diet and health relationships and implications for dietary guidance [34-36].

5.1.2 Current guidance related to dietary intake of fats and oils and health

The complexity of the epidemiological evidence base is reflected in the recommendations around consumption of fats and oils, depending on whether dietary guidance relates to fats and oils as nutrients, ingredients, components of foods, foods that are predominantly comprised of fats (oils or spreads) or other foods or dietary patterns (sections 4.1 and 4.2).

In Australia and New Zealand, recommendations for fats and oils as nutrients (usually encompassed by the term 'fat') are developed in the NRVs, not in food-based dietary guidelines. The NRVs outline Acceptable Macronutrient Distribution Ranges (AMDR) which recommend the desirable percentage of energy to be derived from macronutrients, including from total fats and different types of fats in the diet; current recommendations are 20-35% energy from fat with no more than 10% energy derived from saturated fat [6]. The ADGs are constrained in recommending dietary patterns that are consistent with the current NRVs (NHMRC 2013) but this is not well understood by stakeholders advocating for higher fat diets, including some dietitians [37]. The AMDRs and other NRVs (RDIs, EARs, UL, SDTs) for total fat, saturated fats, trans fat, monounsaturated fats and unsaturated fats have not been reviewed since published in 2006 [6]. Further, the recommendations of the NRVs (2006) were based on narrative reviews [6]. Priority nutrients are being reviewed in an ongoing manner as resources allow [38].

Given this gap in recent evidence, and that the ADGs rely on quality NRV recommendations as one source of evidence for their formulation (section 4.1.1.), when the systematic literature reviews to inform the most recent review of the ADGs were conducted, and the search terms included 'fat' so studies around fats as nutrients were returned, as well as foods, the resulting evidence around fats as nutrients was included in Chapter 3 of the ADGs (p.69-70) [3]. As identified in phase one of the DFaD review, such inclusion may have confused some stakeholders, who appear to think that the purpose of the ADGs includes making nutrient recommendations [1]. This situation has not been aided by reference to saturated fats in Guideline 3a and 'mostly reduced fat' regarding milk products in Guideline 2 (section 4.1.2.1.).

Some variations in the wording around fats and oils as foods was identified. The length of the lists of sample foods included in ADGs Guideline 3a, the Educators Guide [5] and the HF messaging, exemplifies the challenges inherent in succinctly illustrating examples of discretionary foods to assist understanding of those with more limited food and nutrition literacy skills. Insight into the contemporary evidence-base around guidance of fats as nutrients is provided by Liu and colleagues, who present current epidemiological evidence around dietary fats and health relationships and related recommendations in a US context [9]. The contextual relevance of such US guidance would need to be assessed before such evidence could be translated potentially to Australia. For example, Liu et al noted: the 2015 US Food and Drug Administration ruled that partially hydrogenated oils are no longer "generally recognized as safe" and trans fats should be removed from the food supply; and that the evidence base shows that single nutrient targets are problematic for addressing diet-related chronic diseases, but single nutrient targets are not currently communicated as part of dietary guidelines in Australia.

In many ways Australia had been ahead of the US in reviewing the literature around fat and health, and several of the recent findings summarised in Liu et al 2017 were first captured in the evidence review conducted to inform the revision of the ADGs (2013). Such evidence contributed to the changed emphasis of the 2013 ADGs, which focused more on encouraging reduction in intake of foods containing saturated fat, than on the overall reduction in total fat intake that had been emphasised in previous dietary guidelines [3].

This position is consistent with WHO guidance around obesity, that has shifted emphasis away from a focus on macronutrient distribution to overall dietary patterns and energy balance [20] and with contemporary evidence that the food matrix must be considered when assessing food, diet and health relationships [34-36].

With respect to evidence around dietary intake of foods rather than nutrients, the ADGs were among the first international guidelines to attempt to focus predominantly on food-based dietary guidance (see section 4.1). The evidence reviews [13] were among the first globally to show health benefits of some dairy foods⁸, such as milk, yoghurt and cheese, irrespective of their fat content and to identify that the available literature did not provide sufficient evidence to recommend reduced fat milk, yoghurt or cheese over regular fat products [3, 13]. Similarly, the ADGs evidence reviews were among the first internationally to inform recommendations limiting intake of lean red meat [13]. Conversely, reviews of RCTs showed that when fat was separated from milk to produce products such as cream and butter, consumption of those products was associated with increased risks of some diet-related disease including cardiovascular disease [13, 26]. Such evidence has now been confirmed by the results of recent systematic literature reviews for the HF [26] and is also presented in the review by Liu et al [9].

Dietary modelling illustrated that accommodating the necessary type, range and quantity of healthy foods required in healthy dietary patterns was challenging, given the relatively low energy limits of diets for most Australians, who are sedentary [14]. This led to recommendations to consume mostly reduced fat milk on the basis of dietary modelling, rather than any intrinsic health risk associated with consumption of full fat milk itself. This is because the lower energy content of reduced fat milk provides 'room' within recommended energy intake limits for the inclusion of adequate quantities of other healthy foods in the total diet. So any nutrient-based messaging that discriminates milk, cheese and yoghurt on the basis of saturated fat content inadvertently penalises full fat milk compared to reduced fat milk on the basis of dietary patterns, rather than the nature of the relationship between health outcomes and consumption of the food itself, and is not clear that such nutrient-based messages would actually deliver health outcomes at population level (sections 5.3 and 5.4) [2].

This example highlights the challenges in differentiating evidence around quality of fat (the effects of replacing specific types of fats in the diet with other fats), with evidence around quantity of fat in the total diet which affects the energy-density of the diet and may affect total energy intake and hence weight gain and obesity [3].

⁸ The systematic reviews showed that consumption of milk, cheese and yoghurt, regardless of fat content, is associated with reduced risk of ischemic heart disease and myocardial infarction, stroke, hypertension, colorectal cancer (Grade B), and renal cell cancer, rectal cancer, improved bone mineral density, metabolic syndrome and type 2 diabetes (Grade C)

5.1.3 Current messaging around fats and oils and health

As expected, the results of this review identified messaging around fats and oils in several areas, i.e. in terms of nutrients, foods and/or dietary patterns, reflecting the complexity around the terminology of 'fats and oils', which covers both foods (such as oils and spreads) and/or components of foods (such as visible fat on meat) and/or ingredients in foods (including 'hidden' fats in both five food group and discretionary foods) and/or nutrients, such as macronutrients or different types and groupings of fatty acids (Appendixes 1, 2 and 3). Key messages are presented in Table 3 and compared below.

Messaging around fats and oils must be seen in the context of the general 'noise' of foods marketed and dietary advice promoted in Australia, including recommendations for low carbohydrate diets, low carbohydrate and high saturated fat diets (such as Paleo), vegan diets, other plant-based diets, and many other fad diets, including by those with vested commercial interests, as identified in the DFaD review [1, 2].

It is not always clear which stakeholders were being targeted by the identified dietary messages around fats and oils, with most aims of dietary guidance identifying multiple stakeholder groups, including health professionals, educators, regulators, industry groups, decision makers, and the general public. Exceptions included the brochures for specific age, gender and life course stages developed specifically for the general population as part of the ADGs suite of resources.

5.1.3.1 Consistency of messaging around fats and oils within the ADGs suite of resources

Across the suite of ADGs resources there was generally good consistency in messaging around fats and oils. Some variations in terminology reflected the range of different technical nutrient names used for different types of fats/fatty acids internationally. This could be expected as the ADGs drew evidence from international studies and literature. Some documents, notably the Educators Guide [5], provided more detail about specific nutrients and mechanisms, to help provide greater explanation of the evidence-based underscoring recommendations. In this context, some variations in terminology around fats and oils in the ADGs documents were noted, however these accurately reflected the range of technical nutrient names used for different types of fats and fatty acids and appeared justifiable given the different audiences of different resources. The review identified that 'unhealthy' foods high in saturated fat are not consistently identified as being discretionary foods in the ADGs suite of resources; nor are the 'healthy' exceptions to this, such as milk, yoghurt and cheese, identified consistently (Appendix 2; section 4.1.2). This suggests that greater consistency in identifying 'unhealthy' and 'healthy' food and drinks choices, independently of their specific saturated fat content, could reinforce evidence-based messaging.

Throughout the range of ADGs documents and resources, the wording of Guideline 3a usually is reflected accurately. However there are a few examples, most notably in the more practical resources provided on the website or in brochures, which target specific population groups, such as pregnant women, where the term 'saturated fat' in the first phrase of the guideline has been replaced by total 'fat' (Appendix 2). Similarly, the terms 'reduced fat' and 'low fat' are used in various documents. While this may be an attempt to simplify messaging to suit the needs of specific population groups, it could be confusing for some consumers.

Given that all fats have the same energy density, it is understandable that attempt to simplify messaging may have resulted in a focus on total fats rather than type of fats in the obesity context. This is particularly the case in ADGs resources that have a strong focus on weight control, such as the more practical information provided on the website, where messaging appears both around the need to choose foods with lower energy density (that is options lower in total fat) and the need to limit discretionary foods (which are defined as those high in saturated fat).

Hence, the inconsistencies in messaging in the ADGs suite of resources were related primarily to tensions between messaging around the quantity of fat, compared to the quality of fat, in the context of weight control (Guideline 1). It may need to be made clearer that, while all fats have similar energy density, consistent with ADGs Guideline 3a, it is most important to limit intake of those discretionary ('unhealthy') foods, which will also help to restrict intake of saturated fats, and total fats and energy. The ordering of the ADGs may inadvertently focus attention on messaging around reduction of fat per se, whereas the focus should be more on avoiding all 'unhealthy' foods and drinks, which now provide over 35% and 40% of energy intake in Australian adults and children respectively [39].

5.1.3.2 Consistency of messaging around fats and oils between different stakeholders

Scrutiny of available draft and final versions of the relevant documents and submissions following public consultation on the ADGs in 2012 suggest the messaging in Guideline 3a around replacing foods (oils and spreads) containing predominantly saturated fats with those that containing predominantly polyunsaturated and monounsaturated fats high fat foods may have been in response to the evidence presented by the HF at the time⁹.

The number, detail and complexity of the dietary recommendations included in the HF's revised position statements on "dairy" foods, "meat", "eggs" and "heart healthy eating" (section 4.2.1.) illustrate the challenges in providing simple, actionable dietary guidance around fats and oils, and indeed, all components of dietary patterns. Moreover, the HF provides dietary messaging around nutrients, foods and dietary patterns related to cardiovascular outcomes specifically.¹⁰ However, the ADGs must provide guidance around healthy eating in the context of all health risks and benefits related to a number of diet-related diseases and conditions, including chronic conditions such as diabetes and many cancers, in addition to cardiovascular disease, as well as obesity, undernutrition and immunity. HF messaging also includes more clinical dietary advice, which is out of scope of the ADGs.

Overall the HF heart-healthy eating recommendations for "dairy" foods are consistent with ADGs, except that the HF explicitly orders (i) preferred protein foods (favouring fish, legumes, nuts and seeds, over red meat (and silence on other relevant foods like poultry and eggs) and (ii) preferred sources of fat (favouring fish, olives, seeds, nuts and oils made from them, over milk, cheese or yoghurt). However, the ADGs are not included in the references of the revised HF

⁹ The Heart Foundation's submission to the Public Consultation on the Australian Dietary Guidelines in 2012 is not publicly available with other submissions. However, the Heart Foundation's position also was referred to in the submission of the Queensland Public Health Forum (available at https://consultations.nhmrc.gov.au/public_consultations/submissions/dietary_guidelines).

¹⁰ The relationship between consumption of unprocessed red meat and risk of type 2 diabetes is mentioned also in the HF's position statement on meat and heart healthy eating and on eggs and heart healthy eating.

position statements. Additionally, the HF guidance does not specifically recommend reduced fat milk products, except for people who would benefit clinically from LDL-lowering dietary interventions. The latter is a major shift in HF position. The HF also effectively recommends combining milk, yoghurt and cheese with vegetables, wholegrains or fruit. The rationale for this, and for the order of the recommendations re food sources of protein and fat, is not always clear (Appendix 3). The HF does not include the NHMRC ADGs when listing related documents, and is silent about the ADGs, missing an opportunity to link with and promote broader evidence-based dietary messaging.

The review of other key Australian organisations' websites found that most dietary messaging was consistent with the ADGs or did not mention fats and oils at all (section 4.2.2; Appendix 4). For example, the PHAA publishes numerous position statements on healthy diet, developed by the Food & Nutrition Special Interest Group; of these, only one on palm oil and sustainability mentions fats and oils specifically [40]. Exceptions include Diabetes Australia, which, perhaps given the strong relationship between obesity and risk of type 2 diabetes, recommends following a diet lower in dietary fat, particularly saturated fat, but also provides more detailed information about healthy fats [41]. While advising consumption of meat as recognised in the ADGs, in provision of recipes the MLA goes on to recommend quantities of meat greater than specified in ADGs recommendations [42].

In addition to key messages summarised in Table 3, some stakeholders communicated quite specific messages. Examples include the FSANZ [43] and AFGC [44] messages that trans fats are not a problem in Australia. This appears to explain why trans fats are much less often mentioned in messaging around fats and oils in Australia than internationally (Appendixes 2, 3, 4; section 4.2). However, the FSANZ report on trans fats [22] showed that 10% of the Australian population is at risk of excess intake of trans fat, and these are mainly the most vulnerable groups such as Aboriginal and Torres Strait Islanders who are already at elevated risk of CVD. This has prompted various groups to call for randomised food sampling to better assess levels of trans fat in the Australian food supply, the inclusion of trans fat content on the labels of all foods in Australia, and the development and active communication of messages around avoiding highly processed discretionary foods [45-48].

The results of this review also identify some confusion in the literature and available reports about the scope of general messaging around dietary recommendations, and the specific case of food labelling. For example, the communique of the June 2018 meeting of the Australia and New Zealand Ministerial Forum on Food Regulation [49], which considered the FSANZ report on consumer attitudes to fats and oils focused only on response to the section of the report dealing with food labelling, noting that: "the Forum Ministers considered a review paper on the labelling of fats and oils and acknowledged that in relation to public health, consumers' ability to identify saturated and/or mono and polyunsaturated fats in food is limited due to a lack of labelling information". This is consistent with the remit of the Forum [1, 2].

As found in the DFaD reviews, the algorithm used to assess the relative healthiness of packaged foods in the HSR system applies a criterion around saturated fat content to rank milk products [1, 2]. This suggests that the ADGs and HF guidance that consumption of milk, yoghurt and cheese regardless of fat content is associated with decreased risk of several diet-related diseases is not well understood by all stakeholder groups..

This review identified several key differences between dietary messaging in different countries. For example, the 2015-20 US Dietary Guidelines recommend limiting intake of saturated fatty acids to less than 10% of energy intake [50], whereas it is the NRVs in Australia, not the ADGs that communicate such nutrient-based advice. Also in the Americas there are contradictions between Dietary Guidelines recommendations and the recommendations of key stakeholder groups with, for example, the 2015 Canadian Heart & Stroke Foundation Position Statement setting no limits on saturated fatty acids in the diet [51].

5.1.4 Relationship between messaging and consumers' knowledge, understanding and behaviours

This review summarised the different types of current dietary messaging around fats and oils and consumer understanding of these messages in Table 3. Studies do not generally clarify which group of consumers in which countries were exposed to which messaging when, or the dose or frequency of such messaging; therefore, it can be challenging to confidently assess whether consumers' knowledge, understanding and behaviours is a result of messaging, or other factors. The source of the messaging that consumers were responding to was also not clear in the included reviews. For example, consumers were generally aware of the health benefits of olive oil, but may have this understanding as a result of advertising by the olive oil industry, rather than by messaging from the health sector.

The included reviews found generally that nutrient-based messaging was not well understood (section 4.3.3) (i.e. messaging around fats (and oils) as fatty acids, groups of fatty acids and different types of fats, with respect to nomenclature, grouping (e.g. saturated, trans, monounsaturated or polyunsaturated)). The evidence suggests that while consumers have a basic level of knowledge of fats, knowledge decreases with details of messaging around specificity of nutrients.

In particular, Liu et al found consumers' understanding was challenged by nutrient 'chemistry', fat percentages and vague terminology (e.g. 'moderation'). Their knowledge was limited about fat types, energy levels of different fats, health benefits and food sources [9]. Knowledge about saturated fats and omega-3 fatty acids was relatively high, particularly in the US. Liu et al did not find that knowledge of terminology or nomenclature of fatty acids was essential to improve food literacy [9].

Evidence suggested that consumers categorise fats into two groups on the basis of perceived health effects and other factors: good/bad; healthy/unhealthy; natural/processed; and saturated/unsaturated. There was recognition that good fats are needed in the diet, but beyond avocados and olive oil (which may have resulted from food industry messaging rather than government messaging), consumers had limited understanding of food sources of good fats. Consumer understanding of natural/processed fats and oils (i.e. that butter was 'better' than margarine' or that natural foods were not fattening) was not necessarily consistent with dietary guidelines [9].

As people chose foods to eat, rather than nutrients, food-based messages were seen as potentially effective, and Liu et al recommended moving to practical, food-based messaging in dietary guidance. However, the impact of the six different types of food-based messages around

fats and oils as 'healthy' or 'unhealthy' foods, ingredients or food components were not all assessed in the reviews.

With regard to messaging around healthy (unsaturated) 'fats and oils' as foods, some consumers understood that some fats and oils as foods (e.g. olive oil) were healthier than others but could not identify other healthy options very well. This reinforces the notion that specifying 'healthy' food sources (of healthy fats) may be useful for some consumers (Table 3).

Similarly, consumers understood that some foods that were very high in (or predominantly) comprised of healthy fats were healthy (such as avocados, nuts (as a group), and oily fish which were well identified), but were confused about dairy foods (Table 3).

Although consumers appear to understand that some fats and oils are healthier than others, they were less confident about what these are (Table 3). Relatively little information about the potential impact on consumers of messaging around the 'unhealthy' foods predominantly containing saturated fat that should be limited or avoided (such as butter, cream, palm oil or coconut oil) was identified in the two literature reviews. This could relate to the findings in the recent DFaD reviews that specific "eat less" dietary messages are promoted less than "eat more" dietary messages throughout the community [1, 2]. Although, there was also little information about consumer understanding of messaging that recommended replacing these foods with others that were high in unsaturated fats (e.g. replacing palm or coconut oil with polyunsaturated and monounsaturated oils, or butter with unsaturated spreads) (Table 3).

More information about consumers' knowledge, understanding and behaviours around unhealthy foods that are relatively high in fats or saturated/trans fats was identified. However, there was little mention of trans fats in the Australian literature. Interestingly, consumers tended to ignore such messaging if it concerned a favoured 'unhealthy' choice. Similarly, compared to knowledge of fat content of healthy foods, consumers tended to significantly underestimate fat and saturated fat content of 'unhealthy' foods, and were less confident and accurate identifying the fat content of takeaway and restaurant foods, than others. This suggests consumers do not want to hear negative health messages about foods they enjoy, and supports the need for nutrition policy actions that improve food supply and environments, rather than relying on 'education' [52].

Consumers were particularly confused about messaging that focused on energy, total fat, nutrient-density and unsaturated fats in the context of weight control (ADGs Guideline 1). Across the literature identified in the FSANZ review, most consumers recognised that fat, compared with other macronutrients, had the highest energy content (i.e. calories or kilojoules) per gram [8]. However, some consumers seemed to (incorrectly) believe that saturated fat had a higher energy content, or was more 'fattening', than unsaturated fat, and others believed that greater quantity of reduced fat products could be consumed than the equivalent full fat product. Consumers were particularly confused about the recommended quantity of different types of fat and food-sources of fats to be consumed. Such information again supports the need for clear, actionable food-based messaging.

Practical messaging around removal of visible unhealthy (saturated) fat on foods was seen as relatively easy to action. Consumers also reported that it was relatively easy to reduce 'added' fats to dishes (e.g. by not using butter or cream), and to choose unsaturated oils (e.g. olive oil). However, consumers reported that it was relatively difficult to reduce saturated fat invisible in

foods, or avoid discretionary foods (which they enjoyed). This reinforces the benefit of healthy food environments that make it easier for consumers to choose healthier options.

The review found that consumers are generally confused about fats (and oils) and their role in health, aggravated by perceived contradictory information and changing nutritional advice. Indeed, there is evidence that such advice has changed over time, particularly around emphasis on the quantity of total fat and unsaturated fat and recommendations around fat quality. There are some differences between countries [9]. Messaging has changed more in respect to quantity and quality of fats as nutrients, than food-based messaging in Australia, although this is not clear due to the lack of temporal information provided in the FSANZ report [8]. For example, the FSANZ analysis implied that consumers were still influenced by messages about reducing total fat and that many considered total fat to be more important than saturated fat, but did not control results for when the studies were published, so were presenting outdated findings pertaining to 'old' messaging. Further, as the two recent phases of the DFaD review [1, 2] identified that the ADGs have not been communicated as intended in Australia, it is unclear what practical effect the intended messaging may have had contributing to consumer confusion.

5.1.5 Views/perspectives of different stakeholders

The two recent systematic DFaD reviews found that different stakeholder groups interpreted and used dietary guidance around discretionary foods and drinks outlined in the ADGs in different ways [1, 2]. This current review observed similar variations in dietary messaging around fats and oils; however less information was available, so it was not possible to categorise messaging by specific sectors such as health professional, educator and industry groups, nor sub-sectors such as dietitian/nutritionists, medical officers, lawyers, etc.

Insights gained in this review were supported by scrutiny of the submissions and responses to public consultation on the ADGs suite of documents available on the NHMRC website, which illustrates a range of views on the evidence and dietary guidance around fats and oils, as both foods and nutrients [53]. In general, submissions to public consultation from food industry groups advocated for greater prominence and promotion of their own food products and those from other organisations advocated for their long-held positions, perhaps to maintain credibility with their membership and donor bases. The HF and Diabetes Australia are among organisations that provide general dietary guidance of a more clinical nature for those already affected by specific health issues (which is beyond the scope of the ADGs) and provide general dietary guidance of a clinical nature. For example, the HF recommend "For people with elevated cholesterol and those with existing heart disease, reduced fat products are recommended" and Diabetes Australia recommends following a "diet lower in dietary fat, particularly saturated fat". Such messages targeted to a particular clinical subgroup may confuse and undermine ADGs messaging for the whole population.

Some stakeholder groups tend to focus on one type of macronutrient, such as 'fat', which has the potential to distort dietary guidance and consumer perceptions around healthy eating. This has been seen previously when specific messages are 'cherry picked' from a suite of dietary recommendations that are interrelated and designed to be conveyed as a package. Dietary guidance in Australia, from the very first edition [54], discouraged consumption of unhealthy foods (or 'discretionary food and drinks' – previously called 'extra' foods, including those high in added sugar). As identified in the DFaD reviews [1, 2], some sections of the food industry have

chosen to focus on selective messaging around specific nutrients that advantage the promotion of the unhealthy foods and drinks that they produce. An example is the nutrient content labelling of “low fat” foods, especially those that are conversely high in added sugar. Such “low fat” labelling may influence, and undermine, consumers’ understanding of more holistic, evidence-based dietary guidance.

There was evidence that some other stakeholder groups also tend to interpret messaging around fats and oils mainly in terms of the implications for food labelling, particularly if a nutrient-focused perspective is taken. Neither of the identified literature reviews found evidence that better understanding of types of fatty acids would lead to improved food choice and diets [8, 9]. Conversely, Liu et al found that consumers wanted simple, practical information around how to choose, prepare and eat foods containing ‘healthy fats’ based on the five food groups [9].

As found in the recent reviews of discretionary foods, food labelling tends to take a nutrient-based approach, presenting nutrient composition data in the NIP or interpreting this in nutrient profiling systems such as the HSR system. In Australia and New Zealand, the HSR approach focuses on saturated fat only, and doesn’t allow for or consider the effect of the matrix of the food vehicle [34-36] so does not necessarily provide information that will lead to health gain. The potential use of warning labels on discretionary ‘unhealthy’ choices would avoid this problem, as identified in phase 2 of the DFaD review [2].

5.2 Implications of findings

The review found that, in addition to having either a nutrient-based focus, a food-based focus or both, current messaging varied around emphasis on “what” should be eaten or “why” it should be eaten, with relatively little focus on “how much” should be eaten.

Given the evidence that consumers tend to ignore dietary guidance to limit intake of their favoured foods, the inclusion of stronger rationale behind such messaging may be perceived desirable by public health groups. Hence the mixing of food-based and nutrient-based messaging may be the result of attempts to communicate the rationale to justify why particular foods should be limited in the diet. Such messaging potentially confounds dietary guidance around “what” foods to eat, with the potential advice about “why”, and appears to be confusing for some consumers (see section 5.1.4).

The broad target audience for the ADGs also makes messaging to suit all groups challenging as each group is likely to have different expectations of, and use for, dietary guidance. While food-based messages around “what” ‘fats and oils’ to consume are more suited to consumers who are members of the general public, other groups may be more receptive to mechanistic or nutrient-based messaging. For example, as apparent from scrutiny of submissions to public consultation on the draft ADGs [53], many health practitioners value information about food and health relationships and the rationale that underscores dietary guidance. Other groups, such as FSANZ, which is responsible for regulation of the food supply, including fortification, may see greater utility in nutrient-based guidance such as normally provided in the NRVs (see www.foodstandards.gov.au).

Results of this review support the need for clear concise messaging around “what” to eat, supported by more detailed justification and rationale outlining the evidence base around “why”

and additional information about “how much” to consume. This has significant implications for the format of dietary guidance.

The ADGs 2013 attempted to follow such an approach, with “what” to eat outlined in the dietary guidelines, the underpinning evidence-based summarising “why” in each chapter of the ADGs, and the recommended “amounts” for each age/gender group to consume outlined in the Australian Guide to Healthy Eating. The recent HF guidance produced two documents for each food group addressed: a position statement focusing on “what” to consume, and an evidence brief focusing on “why”. With the exception of some foods such as lean red meat, little information was provided on “how much” to eat in this suite of resources.

Past dietary guidance around fats and oils has communicated the amounts to eat, with relative terms such as ‘eat more’ and “eat less” than the average Australian consumer. Messaging to replace foods that are predominantly comprised of saturated fats (e.g. palm and coconut oil) with foods that are predominantly comprised of unsaturated fats (e.g. safflower or olive oil) implies amounts remain the same. Results suggest that some consumers are looking for specific quantitative information about “how much” to consume in absolute terms, with several expressing preference for household measures (e.g. teaspoons) rather than weight or volume (e.g. grams or mls).

The consistency of findings in both the FSANZ report and Liu et al 2017 that consumers have basic awareness of ‘good’ and ‘bad fats in the diet but poor knowledge of food sources, are confused about the scientific terminology of fats, and that messaging is resulting in overall reduction in fat intake (i.e. both good and bad fats), support the notion that consumers would benefit more from food- based, rather than nutrient-based recommendations, with more practical guidance on food choices, quantities and preparation.

As was also found in the recent DFaD review [1, 2], results confirm that, whatever the messaging, there is a need for increased and concerted dissemination and promotion of dietary guidance throughout the community.

5.3 Context of messaging around fats and oils – the need for clear definitions of ‘unhealthy’ (and ‘healthy’) foods

Overall messaging around fats and oils in the diet should be considered in the context of broader dietary guidance, particularly related to messaging around ‘healthy’ and ‘unhealthy’ foods and dietary patterns.

The evidence presented in Phase One and Phase Two of the DFaD review [1, 2] considered the current definition/s of ‘discretionary’ and synonyms for ‘unhealthy’ food and drinks and application and alignment across current nutrition policy, programs and guidance, and use by different stakeholder groups, both nationally and internationally. Over 20 different terms and synonyms for ‘unhealthy’ food and drink were identified. The findings of the systematic reviews found that the most promising term for ‘unhealthy’ food and drinks and synonyms is ‘unhealthy’ food and drinks, and supported replacement of the term ‘discretionary’ food and drinks with the term ‘unhealthy’ food and drinks.

By default, ‘unhealthy’ food and drinks (and ‘discretionary’ food and drinks) are those whose consumption is associated with negative health impacts and outcomes. Further, ‘unhealthy’ food

and drinks (and 'discretionary' food and drinks) are the inverse of 'healthy' food and drinks. The evidence presented in the phase two systematic review [2] suggested that 'healthy' food and drinks are defined as those for which the best available epidemiological evidence shows a relationship between the consumption of the food or drink and one or more of the following:

- a healthy diet,
- protective factors for diet-related disease, and
- positive diet-related health outcomes and wellbeing.

Therefore, the review [2] also suggested that 'unhealthy' food and drinks are defined as those for which the best available epidemiological evidence shows a relationship between the consumption of the food or drink and one or more of the following:

- a poor diet,
- risk factors for diet-related disease, and
- adverse diet-related health outcomes.

In turn, these definitions apply to 'discretionary' food and drinks and other synonyms for 'unhealthy' foods and drinks.

Currently, as seen in the DFaD review, different stakeholders, sectors and consumer groups interpret the term 'unhealthy' food and drinks differently [1, 2]. This may be a strength rather than a limitation, as general messaging to consume more 'healthy' food and drinks and consume less 'unhealthy' food and drinks is likely to have resonance with each group, while allowing for potential contemporary social marketing around evidence-based terms and concepts. Further investigation, such as transparent public consultation and qualitative research including focus groups, is recommended to test the utility of the proposed approach.

5.4 Suggested approach to align messaging on fats and oils to minimise identified gaps in consumer understanding

Consideration of the findings of this review highlight several opportunities to align and strengthen messaging to improve consumer understanding and selection of 'healthy' fats and oils and key foods. As noted in the results (section 4) the main opportunity appears to be to separate messaging around 'fats and oils' in three areas, focusing on (i) nutrients (fatty acids), (ii) foods, and (iii) dietary patterns. Only areas (ii) foods and (iii) dietary patterns pertain to the ADGs.

Based on the evidence presented in Results (section 4) and in the Discussion above, our suggested approach to align messaging on fats and oils to minimise identified gaps in consumer understanding is detailed below (sections 5.4.1 to 5.4.3). Key points are included in Table 4. Table 1 presents a summary of the suggested messaging.

5.4.1 Opportunities for messaging around fats and oils as nutrients

Messaging around 'fats and oils' as nutrients should be covered by the nutrient term 'fat'. This should be informed by revision of the NRVs, and ideally follow the methodological framework for the priority review of NRVs under development by the NHMRC [55] including, for each fatty acid separately, for each group of fatty acids (trans fats, unsaturated, mono-unsaturated and polyunsaturated), and for total fats, determination of Estimated Average Requirement (EAR),

Recommended Dietary Intake (RDI), Adequate Intake (AI), Upper Level of Intake (UL), Suggested Dietary Target (SDT) and Acceptable Macronutrient Distribution Ranges (AMDR) as appropriate.

As people choose to consume foods, not nutrients, messaging around fats and oils as nutrients can add unnecessary complexity to dietary guidance. Further, such messaging doesn't necessarily help consumers choose healthy foods, as it does not take into consideration any effect of the food matrix on food, diet or health relationships. For example, messages around saturated fats being unhealthy, and saturated fats being contained in milk, may imply full fat milk is an unhealthy choice – however this is not consistent with the current scientific evidence base around food, diet and health relationships. Detailed information about fats as nutrients could be included in companion documents to dietary guidance as background information for stakeholders other than the general public, including health professionals, educators, food industry sectors, food regulators and decision makers.

This potentially affects the format of dietary guidance around fats and oils, which, on the basis of the approaches identified in the review, ideally would include:

- (i) Brochure and online: clear concise messaging around exactly “what” foods to eat, with examples provided (primarily targeting members of the general public), supported by
- (ii) Brochure and online: clear concise messaging around “how much” to consume, including data tables for different ages/genders/life course stage, such as pregnancy (primarily targeting members of the general public; secondarily targeting health professionals), and
- (iii) Online: very practical tips about shopping, preparing, cooking and storing specific foods (primarily targeting members of the general public), and
- (iv) Document and online: a companion ‘background’ document with detailed justification and rationale outlining the evidence base around “why” the foods should be consumed, including epidemiological evidence and mechanistic rationale such as nutrient-focused information (primarily targeting health professionals and academics).

Revision of ‘fat’ nutrient requirements is required in Australia (and New Zealand) given current controversies around the relative contribution of different fatty acids and different amounts of fat to diet-related health outcomes.

5.4.2 Opportunities to improve messaging around fats and oils as foods

While more recent ADGs have moved from nutrient messages to food-based messages, the wording of some guidelines still includes a mix of both food and nutrient recommendations. Given the strengthening evidence around impact of different foods and not nutrients on chronic diseases (e.g. milk and CHD), the dietary guidelines and messages need to move away from nutrients and focus only on foods [3, 9, 25, 34-36].

Messaging around other ‘fats and oils’ as foods, ingredients, and/or components of foods (both invisible and invisible) should be developed and tested during revision of the ADGs.

- (1) Messaging around ‘fats and oils’ as foods pertains to those foods that are dominantly comprised of fatty acids (such as oils and spreads and the nuts and seeds from which these are derived) should centre on the promotion of ‘healthy’ choices and discouragement of the

consumption of 'unhealthy' options. These should be exemplified by the provision of detailed food lists. While 'healthy' choices would be those that are dominantly comprised of unsaturated (monounsaturated and/or polyunsaturated) fatty acids, and unhealthy options would be those that are dominantly comprised of saturated fatty acids, reference to the types of fatty acids would not constitute a necessary part of specific food-based guidance.

Messaging should include recommendations to:

- choose healthy oils derived from sunflower and safflower seeds, soybeans, cottonseeds, sesame, corn, grape seeds, canola seeds, nuts (including walnuts), peanuts, rice bran, avocados and olives and the spreads and pastes made from them, and
- avoid unhealthy oils and spreads including palm oil, coconut oil, butter, cream and cooking margarine.

In the context of the identified need for more practical dietary messaging around fats and oils, it could also be useful to note in background information that, with the exception of palm oil and coconut oil, products that are comprised mostly of saturated fats tend to be solid at room temperature.

(2) Messaging around 'fats and oils' as ingredients in foods (including 'hidden' fats in both five food group and discretionary foods) should centre on the promotion of 'healthy' food and drink choices from the five food group foods which contain healthy fats and/or 'benign' fatty acids in the context of the food matrix, and discouragement of the consumption of 'unhealthy' options which reflect discretionary choices. Reference to the types of fatty acids 'hidden' in the foods and drinks should not constitute a necessary part of specific food-based guidance.

Encouraging consumption by listing food sources of predominantly healthy oils and spreads, and the healthy foods from which they are derived – and, conversely, discouraging consumption by listing food sources of predominantly unhealthy oils and spreads – is likely to provide clear and practical guidance to consumers.

Messaging should include recommendations to:

- choose healthy foods and drinks from the five food groups including oily fish, avocados, nuts and seeds, legumes, olives, grass-fed meats, poultry, eggs, milk, yoghurt and cheese, and
- avoid unhealthy foods and drinks including most biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.

Additional guidance around specific foods could be added (e.g. no more than 2-3¹¹ serves of lean red meat per week). The current evidence base confirms that there is no need to discriminate against milk, yoghurt or cheese on the basis of fat content.

(3) Messaging around unhealthy 'fats' (that is, high in saturated fatty acids) as visible components of foods (such as visible fat on meat, or chicken skin) should centre on the removal

¹¹ Specific quantities need to be informed by updated evidence review to inform the development of revised ADGs.

of that fat prior to consumption. For example, messaging should include consistent and clear advice to remove all visible fat from meat and skin from poultry before consumption.

(4) Messaging around not exceeding energy requirements applies across all macronutrients. This can be very difficult for consumers to understand and enact. Dietary advice should be consistent with other “avoid” and “enjoy” messages. The message can be added to others e.g. those recommending avoidance of lists of sugary foods and drinks. Detailed information about energy balance, macronutrients and energy density could be included in background information.

5.4.3 Additional considerations around opportunities to improve messaging around fats and oils

While key points around our suggested approach to align messaging on fats and oils to minimise identified gaps in consumer understanding are provided in Table 4, it is important to note that the specific content of messaging – including any specified quantities – reflects the dietary guidance outlined in the ADGs 2013, so is subject to review of the current evidence base of food, diet and health relationships to inform the necessary updates. The specific wording of updated messaging content would also need to be informed by further research.

The overall approach is based on the notion that messaging around fats and oils in the diet should be considered in the context of broader dietary guidance, particularly related to messaging around ‘healthy’ and ‘unhealthy’ foods and dietary patterns. Hence, the recommended approach is underscored by clear, evidence-based definitions of ‘healthy’ and ‘unhealthy’ food and drinks. The content of the messages in Table 4 are subject to review of contemporary scientific literature to revise the current ADGs 2013, which are nearly seven years old. Regular review of nutrition literature every five years is necessary, given the number and publication trajectory of nutrition research papers, technological development (for example, that now supports interrogation of health relationships with over 40,000 food variables instead of only 36 nutrient variables) and advances in dietary guidance methodologies.

The findings of this review also provide insights into the potentially effective format of dietary guidance and messaging around fats and oils. Specific guidance should be separated from mechanistic rationale, particularly that based on nutrient content such as fats and type of fats, which may not be consistent with the contemporary evidence base around food, diet and health outcomes. The latter should include detailed background information on the context of the food, evidence of association of its consumption with health benefits or risks, the nutrient content of the food, practical considerations and any special considerations for particular population groups. ADGs messaging should be entirely food-based; reference to the types of fatty acids in foods and drinks should not constitute part of specific food-based guidance. Detailed lists of example foods should increase clarity and hence consumer understanding [9].

Table 4 Suggested messaging around fats and oils to improve consumer understanding and related dietary behaviour¹²

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Suggested food-based messaging (subject to review of the evidence base informing the ADGs)	Comment
Nutrient-based messaging					
1 Messaging around fats (and oils) as fatty acids, groups of fatty acids and different types of fats, with respect to nomenclature, grouping (e.g. saturated, trans, monounsaturated or polyunsaturated), content in different foods and/or health relationships)					
Provided as background and mechanistic information	Not relevant Main source of evidence is outlined in the NRV document	Provided as background information only	Provided as background information only	<p>No need for messaging around fats and oils as nutrients, as people chose foods to consume, not nutrients.</p> <p>Provide background information on different types of fatty acids, groups of fatty acids and fats, such as nomenclature, health risks of deficiency of essential fatty acids and health risks associated with overconsumption of some fats - but highlight the need to consider any 'whole food' effect of the matrix of the food in which they are consumed, and link to the food-based messaging included below.</p>	Messaging around fats and oils as nutrients can add unnecessary complexity to dietary guidance. Such messaging doesn't necessarily help consumers choose healthy foods. For example, messages around saturated fats being unhealthy, and saturated fats being contained in milk, may imply full fat milk is an unhealthy choice. This is not consistent with the current scientific evidence based around food, diet and health relationships.

¹² The specific content of messaging – including any specified quantities – reflects the dietary guidance outlined in the ADGs 2013, so is subject to review of the current evidence base of food, diet and health relationships to inform the necessary updates. The specific wording of updated messaging content would also need to be informed by further research.

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Suggested food-based messaging (subject to review of the evidence base informing the ADGs)	Comment
Food-based messaging (as foods, ingredients or components of foods/drinks)					
1 Messaging around healthy (unsaturated) 'fats and oils' as foods					
<p>Those foods which are comprised dominantly of healthy fats and oils:</p> <p>Oils and spreads and/or the nuts and seeds from which they are derived</p> <p>- Predominantly poly-unsaturated: sunflower and safflower seeds, soybeans, cottonseeds, sesame, corn, grape seeds, canola seeds, and walnuts</p> <p>-Predominantly mono-unsaturated: nuts, peanuts, rice bran, avocados and olives</p>	Unsaturated fat allowance	Recommends "Consume in small amounts" after listing of different food sources of polyunsaturated and monounsaturated fatty acids	Recommends "healthy fat choices with nuts, seed, avocados, olives and their oils for cooking"	Enjoy healthy foods that are rich sources of healthy fats and oils. Choose healthy oils derived from choices including sunflower and safflower seeds, soybeans, cottonseeds, sesame, corn, grape seeds, canola seeds, nuts (such as peanuts, almonds and walnuts), rice bran, avocados and olives, and enjoy the spreads and pastes that are made from these healthy foods.	Listing food sources of predominantly healthy oils and spread, and the healthy foods from which they are derived, is likely to provide clear and practical guidance to consumers.
2 Messaging around 'unhealthy' (saturated) 'fats and oils' as foods					
Those foods which are comprised dominantly of unhealthy fats and oils (palm oil, coconut	Discretionary foods	<p>"Limit" after listing of different food sources of saturated fatty acids.</p> <p>Also from ADGs Guideline 3:</p>	No messaging around definitions, examples or guidance identified	Avoid unhealthy oils and spreads including palm oil, coconut oil, butter, cream and cooking margarine.	Listing food sources of predominantly unhealthy oils and spreads is likely to provide clear and practical guidance to consumers.

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Suggested food-based messaging (subject to review of the evidence base informing the ADGs)	Comment
oil, butter, cream, cooking margarine)		"Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado".			
3 Messaging around healthy foods that are relatively high in different types of fats					
Fats in healthy five food groups, (e.g. healthy fats found in fish, avocados, nuts and seeds and benign fats like fat in full cream milk)	5 Food group foods	ADGs Guideline 2 (relevant to healthy foods high in fats) - Enjoy - Choose mostly reduced fat milk, yoghurt, cheese and alternatives	HF Heart Healthy Eating Principles (relevant to healthy foods high in fats). Include: - A variety of healthy protein sources especially fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. (If choosing red meat, make sure the meat is lean and limit to 1-3 times a week) -Milk, yoghurt and cheese, preferably unflavoured.	Enjoy healthy foods and drinks from the five food groups including: oily fish, avocados, nuts and seeds, legumes, olives, poultry, eggs, milk, yoghurt and cheese, and lean grass-fed meats (no more than 2-3 serves per week)	Encouraging consumption by listing specific healthy foods, including those which are sources of fat, is likely to provide clear and practical guidance to consumers. Additional guidance around specific foods could be added (e.g. no more than 2-3 serves of lean red meat per week). The current evidence base confirms that there is no need to discriminate against milk, yoghurt or cheese on the basis of fat content.

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Suggested food-based messaging (subject to review of the evidence base informing the ADGs)	Comment
			<p>Those with high blood cholesterol should choose reduced fat varieties.</p> <p>- Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking</p>		
4 Messaging around unhealthy foods that are relatively high in fats or saturated/trans fats					
Invisible fat in discretionary foods that can't be separated easily from the food	Discretionary foods and drinks i.e. those high in saturated fats	<p>ADGs Guideline 3 "Limit"</p> <p>Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.</p> <p>• Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.</p>	<p>HF Heart Healthy Eating Principles and meat position statement</p> <p>- Processed meat is not a part of a heart healthy eating pattern and consumption should be limited or avoided</p> <p>- Otherwise relatively silent on limiting intake of unhealthy foods and drinks</p> <p>Egg position statement</p> <p>eggs ... are preferred over discretionary foods</p> <p>Dairy position statement</p> <p>Milk, yoghurt, and cheese are healthy snack options in preference to discretionary foods.</p>	<p>Avoid unhealthy foods including highly processed foods such as many biscuits, cakes, pastries, pies, chocolate, processed meats, sausages, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks</p>	<p>Listing common specific unhealthy foods, including those that are sources of fat, is likely to provide clear and practical guidance to consumers.</p> <p>The message can be added to others e.g. those recommending avoidance of lists of sugary foods and drinks too</p>

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Suggested food-based messaging (subject to review of the evidence base informing the ADGs)	Comment
		<ul style="list-style-type: none"> Low fat diets are not suitable for children under the age of 2 years. 	Background Mentions healthy diets are low in discretionary food and drinks (i.e. sugary drinks, alcohol and heavily processed foods).		
5 Messaging around unhealthy (saturated) visible fat on foods					
Visible fat on healthy food that should be removed before eating (e.g. fat on meat)	Not well defined	Inconsistently – Remove visible fat from meat before consuming No more than 455g red meat per week	No mention	Cut visible fat off red meat and skin off chicken/poultry	Providing consistent and clear advice to remove visible unhealthy fat is likely to provide practical guidance to consumers
6 Messaging around fat and total energy intake/nutrient density					
Focuses on energy density, rather than foods	Guideline 1	In seeking to achieve and maintain a healthy weight it is prudent to choose nutrient-dense foods of lower energy density – that is, those low in total fat, particularly saturated fat, and added sugars in a total dietary pattern that seeks to control overall energy intake. Adults to achieve & maintain a healthy weight - Nutritious foods should be chosen from the five food groups and the unsaturated fat allowance, in	No information provided	As above. Avoid unhealthy foods including highly processed foods such as many biscuits, cakes, pastries, pies, chocolate, processed meats, sausages, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Enjoy healthy foods and drinks from the five food groups including: oily fish, avocados, nuts and seeds, legumes, olives, poultry, eggs, milk, yoghurt and cheese, and lean grass-	Messaging around not exceeding energy requirements applies across all macronutrients, but can be very difficult for consumers to understand and enact. Dietary advice should be consistent with other “avoid” and “enjoy” messages and supported by practical information about how much to consume. Detailed information about energy balance, macronutrients and energy

Food and drink sources of fats/oils	Classification in current ADG/AGTHE system	Current messaging in ADG/AGTHE resources	Current messaging in other Australian resources	Suggested food-based messaging (subject to review of the evidence base informing the ADGs)	Comment
		<p>amounts consistent with Foundation Diets. Discretionary choices should be limited.</p> <p>Adults to promote weight loss - The Foundation Diets should be adhered to, without discretionary foods or any additional serves of the five food groups.</p>		fed meats (no more than 2-3 serves per week)	density could be included in background information.
7 Overarching messaging re dietary patterns					
Focuses on habitual dietary patterns rather than specific foods	The AGTHE and ADGs, particularly Guidelines 1,2 and 3	<i>Enjoy foods</i> from the five food groups, use small amounts of unsaturated oils and spreads, and limit intake of discretionary foods and drinks	The HF Heart Healthy Eating Principles [25]	<p>As above.</p> <p>Avoid unhealthy foods including highly processed foods such as many biscuits, cakes, pastries, pies, chocolate, processed meats, sausages, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.</p> <p>Enjoy healthy foods and drinks from the five food groups including: oily fish, avocados, nuts and seeds, legumes, olives, poultry, eggs, milk, yoghurt and cheese, and lean grass-fed meats (no more than 2-3 serves per week).</p>	Healthy eating patterns do not depend on one type or group of nutrients or foods; they are based on consumption of a combination of healthy foods, eaten regularly, over a lifetime to promote optimal health. In particular, focus on one type of macronutrient such as 'fat' has the potential to distort dietary guidance and consumer perceptions around healthy eating.

5.5 Strengths and limitations of this evidence review

A strength of the review was the systematic manner in which grey literature was searched to identify current messaging around fats and oils in Australia, and the way in which extracted data was analysed to reflect the different way that consumers may perceive fats and oils, that is, as nutrients, foods (or ingredients/components of foods) and in dietary patterns.

The review of reviews was subject to several key limitations, mainly relating to the nature of the literature included. One relates to the inclusion of the FSANZ review [1] which has not been subject to the peer-review process. The decision was made to include this paper, because few reviews of consumer understanding of fats and oils messaging have been published internationally, and it was provided to the review team as background for consideration.

Another limitation of the FSANZ review [1] is that, in drawing conclusions around consumer understanding and behaviours regarding fats and oils, and consumer understanding regarding the content of fats and oils in foods, it inadequately considered or controlled for the place and time that included studies were published. Therefore its findings lacked specificity and were difficult to interpret, especially in the context of the current ADGs 2013 in Australia. Data extracted specifically on consumer understanding and use of fats and oils information on food labels was synthesised and analysed in more detail by the FSANZ review, but was out of scope of this current project.

Another limitation is the low quality and potential bias inherent in the included review by Liu et al [7]. However, neither the FSANZ report [1], in which the review by Liu and colleagues was included, nor the review itself [7] acknowledge these issues. Liu et al strongly recommend food-based dietary messaging to promote consumption of healthy foods high in healthy fats, suiting the interests of their funders - the avocado industry. The serious limitations of this narrative view should be considered when interpreting the findings.

In interpreting the two reviews examining consumer understanding, a more general limitation was the lack of specificity provided around the exact wording of fats and oils messaging to which consumers had been exposed in included studies. The vast majority of included papers in the two reviews interpreted "consumers" as members of the general public, rather than of other stakeholder groups, such as health professionals, educators, regulators, industry groups or decision makers. These two issues limited the utility of the findings.

6 Conclusions

This review aimed to review and consider the messaging provided to consumers via the ADGs and other key Australian Government and non-government documents on fats and oils, determine consumer understanding of fats and oils and identify opportunities to align messaging on fats and oils to minimise any identified gaps in understanding and promote more healthy eating patterns.

The evidence reviewed supported previous findings in the DFaD review [8.9] that reinforced the notion that healthy eating patterns do not depend on one type or group of nutrients or foods; they are based on consumption of a combination of healthy foods, eaten regularly, over a lifetime to promote optimal health. In particular, the evidence confirmed that focus on one type of macronutrient such as 'fat' has the potential to distort dietary guidance and consumer perceptions around healthy eating [7]. The dominant focus on nutrients in messaging has been described as 'reductionist' as it does not take into account any effect of the food matrix on the specific health qualities of each food [34-36, 56].

The evidence illustrated that consumer understanding around fats and oils is limited, and is complicated by the fact that fats and oils may be seen as either foods (such as oils and spreads) and/or components of foods (such as visible fat on meat) and/or ingredients in foods (including 'hidden' fats in both five food group and discretionary foods) and/or nutrients (such as macronutrients or different types and groupings of fatty acids). While consumers have a basic awareness of 'good' and 'bad' fats in the diet, they generally have poor knowledge of appropriate food sources, are confused about scientific terminology, and are confused by messaging which they perceive, often rightfully, as changing.

In Australia and New Zealand, recommendations for fats as nutrients are developed in the NRVs, not in food-based dietary guidelines. Urgent update of the NRVs (RDIs, EARs, UL, SDTs) for total fat, saturated fats, trans fat, monounsaturated fats and unsaturated fats, and other relevant metrics such as AMDRs is required, given the low quality of the narrative evidence reviews underpinning the NRVs, which have not been reviewed since published in 2006 [38].

There appears to be some misunderstanding around the fact that the ADGs focus on food-based, not nutrient-based, messaging. One factor likely contributing to this is that some current messaging around fats as foods mixes "what" to eat with more nutrient-based justification (i.e. ADGs Guideline 3a around limiting foods high in saturated fat). Further, such summarisation does not fully reflect the underpinning evidence base, as it doesn't convey the important role of the food matrix in diet and health relationships.

As seen in the DFaD review, the evidence suggests [8,9] that both 'unhealthy' and 'healthy' foods and drinks need to be better defined to help avoid messaging around fats that includes both food-based and nutrient-based guidance.

People choose to eat foods, rather than nutrients, and the findings of the review clearly support the notion that consumers would benefit more from unambiguous food-based, rather than nutrient-based recommendations, providing practical guidance on what food choices to consume, in what quantities and how to use these. Focusing on food messaging would help avoid confusion by avoiding the need to mention different types of fats as nutrients at all.

The results of the two phases of the DFaD review showed that different stakeholders interpret dietary guidance differently [1, 2]. The results of this review illustrate clearly that consumers (members of the general public) want and need clear, concise, practical, consistent messaging around fats and health that is food-based. The DFaD reviews illustrated that other stakeholders also have specific needs around dietary guidance, and the credibility of recommendations can be affected if these needs are not met.

This potentially affects the format of dietary guidance around fats and oils, as well as the content of the guidance or recommendations. For example, members of the general public could be targeted specifically with clear concise messaging around exactly “what” foods to eat, listing examples, through multiple channels including social media, websites, advertising and brochures. Other stakeholders, including health professionals, educators, food industry sectors, food regulators and decision makers, could be targeted with a detailed ‘background evidence’ document justifying “why” these foods should be consumed, which outlines relevant epidemiology and mechanistic rationale such as nutrient-focused information.

The review identified several opportunities to align messaging on fats and oils to minimise the identified gaps in understanding and promote more healthy eating patterns. Specific recommendations were made for practical messaging around fats and oils on their basis as foods, ingredients, or visible/invisible components of foods (Table 4). Suggested messaging is summarised in Table 1. Table 2 summarises other opportunities to minimise identified gaps in consumer understanding of messaging around fats and oils identified in this review.

In line with the findings of recent DFaD review [1, 2], results confirm that whatever the agreed messaging, there is a need for increased and concerted dissemination and promotion of dietary guidance throughout the community.

Consideration also should be focused on contemporary evidence that it is the whole food, rather than any specific nutrient or component that is the exposure determinant of diet-related health outcomes. In particular, there is a growing body of evidence that interactions in whole foods between nutrients, other food components, mechanisms of food processing and the food matrix itself need further consideration [34-36, 56].

As the literature reviews that informed the ADGs are now 10 years old, and messaging around fats and oils, and all ‘unhealthy’ and ‘healthy’ food and drinks, is related intrinsically to the contribution of these components to dietary patterns (the dominant exposure variable in diet-related health), it is imperative that this work is conducted within the context of broader review of the ADGs.

Poor diet is now the leading risk factor contributing to burden of disease globally and in Australia [57] and so urgent action is required. There is an expectation from the World Health Organisation and the Food and Agriculture Organisation of the United Nations that, as with all countries, Australia will develop and publish up-to-date food-based dietary guidelines and nutrient recommendations within the framework of an active, evidence-based Food and Nutrition Policy [58, 59]. The findings of this review are relevant to all three of these important initiatives.

Appendixes

Appendix 1	Literature search strategy and data extraction process
Appendix 2	Data extraction table of consumer messaging regarding fats and oils in the Australian Dietary Guidelines suite of resources
Appendix 3	Data extraction table of consumer messaging regarding fats and oils in Heart Foundation Position Statements
Appendix 4	Data extraction table of consumer messaging regarding fats and oils in other Australian grey literature on websites
Appendix 5	Data extraction table of fats and oils messaging and consumer understanding from included reviews

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Appendix 1: Literature search strategy and data extraction process

Search strategy

The search strategy was structured to capture wide variations on messaging of 'healthy' and 'unhealthy' fats and oils, including added fats and those other fats visible or invisible within food sources. The primary research question for this review was descriptive in nature and all investigations of causality or evaluations of detailed interventions were excluded; however any evaluations captured in the primary search were extracted and analysed to answer the secondary research question.

As the search aimed to identify evidence of fat and oil messaging and any reported opinions of the strengths and limitations of these approaches, the quality of the systematic reviews was not assessed. Therefore, the appropriate study design is more consistent with a scoping review than a comprehensive systematic review. The search strategy was informed by the Methodology for Joanna Briggs Institute Scoping Reviews Methodology (2015)¹³ as applied in the Scoping Study for a new National Nutrition Policy in Australia [60].

Search timeframe

Documents published since January 2013, as this is the period of time since the release of the current ADGs.

Included sources

- Systematic reviews and narrative reviews

Population

- Country level consumers: any age; any gender.

Databases searched for peer-reviewed reviews

- PubMed
- CINAHL
- Web of Science
- PsycINFO

Search terms

In each database we conducted a search using specific terms to capture the wide range of phrases applied to fats and oils, and foods containing fats and oils (in title and abstract fields), listed in Table A1.

Limiters applied to each database search:

- Publication date: January 2013 – December 2019
- Publication type: systematic review or review

¹³ http://joannabriggs.org/assets/docs/sumari/Reviewers-Manual_Methodology-for-JBI-Scoping-Reviews_2015_v2.pdf

- English language
- Abstract available
- Humans (not animals)

Table A1 Search terms and index categories used

	Terms related to consumer guidance or understanding	AND	Terms related to 'healthy' and 'unhealthy' fats and oils	AND	Terms related to 'healthy' and 'unhealthy' foods sources of fats and oils
Terms	((consumer) AND (guid* OR recommend* OR messag* OR aware* OR understand* OR know*))		(fat OR fats OR fatty OR oil OR oils OR oily OR omega-3 OR omega-6 OR PUFA OR MUFA OR EPA OR DHA OR saturat* OR unsaturat* OR polyunsaturat* OR monounsaturat*)		(palm OR coco* OR milk OR cheese OR yog* OR avocado OR olive OR nuts OR seeds OR meat OR beef OR lamb OR pork OR eggs OR chicken OR poult* OR fish OR spread* OR butter OR margarine OR oil* OR olives OR healthy* OR discretionary* OR unhealthy* OR ultraprocess* OR ultra-process* OR process* OR junk OR take-away OR takeaway OR snack*)

Search returns were piloted in PubMed and returned 70 reviews (which was deemed manageable in the available timeframe) and 445 papers when repeated for original papers rather than limited to reviews.

Search process for databases

The listed databases were searched using the search terms above. The search was piloted in PubMed, and repeated and conducted in CINAHL, Web of Science and PsycINFO. Resulting citations were downloaded into EndNote X9. Duplicates were removed, and the following criteria were systemically applied. Screening for exclusion criterion was based on title, then if required abstract, then if required full text.

Inclusion criteria for database search:

- Any review with a primary aim to provide a definition, tool, strategy, criteria or guidance to enhance consumer understanding and selection of 'healthy' fats and oils and reduction of 'unhealthy' fats and oils.

Exclusion criteria for database search:

- Any review/paper with a primary aim to answer a clinical research question, such as the relationship between foods, food groups or dietary patterns and health, wellness or specific medical conditions
- Any review/paper that does not aim to provide a definition, tool, strategy, criteria or guidance to distinguish 'healthy' and 'unhealthy' fats and oils
- Any review that does not extract data from the original papers on how 'healthy' and 'unhealthy' fats and oils were differentiated

- Any review that does NOT originate from one of the following countries¹⁴: Austria; Belgium; Canada; Chile; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Israël; Italy; Japan; Korea; Luxembourg; Mexico; Netherlands; New Zealand; Norway; Poland; Portugal; Slovak Republic; Slovenia; Spain; Sweden; Switzerland; Turkey; United Kingdom; United States of America (US); Brazil; South Africa; French Polynesia; Argentina; Singapore; Ghana.
- All investigations of causality or evaluations of detailed interventions
- All reviews relevant to food labelling of fats and oils published prior to 2017 (as these will have been captured in the FSANZ review provided).

Data extraction from the included reviews

- Data extraction forms were developed through an iterative process: fields included, but were not be limited to: country, authors, sector, specific message applied (qualitative); specific message applied (quantitative e.g. any nutrient criteria), intent of application, impact on consumer knowledge/intake, outcomes (health, sustainability), author-reported strengths or limitations of approach taken.
- Data were extracted and entered into the form by MH and data extraction of included papers was checked by AL. Any differences were resolved by discussion and consensus; initial agreement was high (>95%).
- Results were grouped by (i) country (ii) message definitions (qualitative and quantitative) (iii) application (setting and policy environment: specific nutrition policy actions, programs and guidance) and (iv) any strengths and limitations

¹⁴ At the time of review it was agreed that these countries showed similar politico-economic systems to Australia and/or international leadership in public health nutrition.

Appendix 2: Data extraction table of consumer messaging regarding fats and oils in the Australian Dietary Guidelines suite of resources

Source	Page	Document or webpage title	Message/s	Comments
Australian Dietary Guidelines [3]	22	Guideline 1: 1.4 Practical considerations: achieve and maintain a healthy weight	In seeking to achieve and maintain a healthy weight it is prudent to choose nutrient-dense foods of lower energy density – that is, those low in total fat, particularly saturated fat , and added sugars in a total dietary pattern that seeks to control overall energy intake.	Recommends low fat foods for healthy weight, particularly low saturated fat – but the first part of this messaging is potentially inconsistent with other messaging within the ADGs suite of resources.
Australian Dietary Guidelines [3]	29	Guideline 1: 1.5 Practical guide for Guideline 1	Adults to achieve & maintain a healthy weight - Nutritious foods should be chosen from the five food groups and the unsaturated fat allowance , in amounts consistent with Foundation Diets. Discretionary choices should be limited. Adults to promote weight loss - The Foundation Diets should be adhered to, without discretionary foods or any additional serves of the five food groups.	This comment notes unsaturated fat allowance instead of healthy fat allowance. The second comment links to work on discretionary foods which, in terms of fat, focus on avoiding foods high in saturated fat.
Australian Dietary Guidelines [3]	31	Guideline 2: Enjoy a wide variety of nutritious foods	Guideline 2: Enjoy a wide variety of nutritious foods from these five groups every day: <ul style="list-style-type: none"> • Plenty of vegetables and legumes/beans • Fruit • Grain (cereal) foods, mostly wholegrain/high cereal fibre • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks not suitable children < 2 yrs.) And drink plenty of water. Summary A variety of foods should be consumed from each of the five food groups – vegetables and legumes/beans; fruit; grain (cereal) foods mostly wholegrain and/or high cereal fibre varieties; lean meats and poultry , fish, eggs, nuts and seeds, and/or legumes/beans; and milk, yoghurt, cheese and/or alternatives. Mostly reduced fat milk, yoghurt and cheese products are recommended for adults, but reduced fat milks are not suitable as the main milk drink for children under the age of 2 years.	The “mostly reduced fat” recommendation is informed by the modelling document; the evidence report did not find any association between consumption of milk, cheese and yoghurt high in saturated fat and adverse health outcomes. This recommendation derives from dietary patterning and energy limit.

Source	Page	Document or webpage title	Message/s	Comments
Australian Dietary Guidelines [3]	36	Guideline 2: 2.2 Enjoy plenty of vegetables and legumes/beans, and enjoy fruit – 2.2.1 Setting the scene	Some processed fruits and vegetables, such as those that are canned or frozen in natural juices, are nutritious alternatives as long as they are produced without added salt, sugar (including concentrated fruit juice) or fat (in particular saturated fat) .	Unusual within DGs to mention fats and oils in context of canned fruit and vegetables. May be helpful to provide more examples, e.g. artichoke in olive oil; mushrooms in cream sauce.
Australian Dietary Guidelines [3]	44	Guideline 2 2.3 Enjoy grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties – 2.3.1 Setting the scene	Excluded are refined grain (cereal) food products with high levels of added sugar, fat (in particular saturated fat) and/or salt/sodium, such as cakes.	Refined grain/cereal foods high in fat/saturated fat are discretionary foods. Need to ensure such terms are used consistently in messaging.
Australian Dietary Guidelines [3]	48-49	Guideline 2: 2.4 Enjoy lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans 2.4.1 Setting the scene	Important nutrients include iodine, iron, zinc and other minerals, vitamins, especially B12, and essential fatty acids including omega-3 long chain polyunsaturated fatty acid (omega-3 LCPUFAs) . Grass-fed meats, poultry and some eggs are also sources of these essential fatty acids . Processed and cured meats can be high in added salt and saturated fat and are not recommended as substitutes for unprocessed meat. These foods fit in the 'discretionary foods' category. Fish and other seafood contain omega-3 LCPUFAs . Nuts and seeds are rich in energy (kilojoules) and nutrients...they contain significant levels of unsaturated fatty acids . Legumes/beans provide some essential fatty acids .	This is background information that meat group foods provide essential unsaturated fats, including Omega 3 LCPUFAs. It is provided as part of justification and mechanisms rather than for dietary guidance or messaging.
Australian Dietary Guidelines [3]	56	Guideline 2: 2.5 Enjoy milk, yoghurt, cheese and/or alternatives, mostly reduced fat 2.5.1 Setting the scene	In reflecting on Australian consumption patterns and ensuring all nutrient requirements are met within energy requirements, it is recommended that reduced fat varieties should be chosen on most occasions . The inclusion of mostly or all full fat milk, cheese and yoghurts proportionally increases total fat, saturated fat and overall energy components of the diet. Reduced fat varieties of milks and/or plant-based drinks are not suitable as a drink for children under the age of 2 years and they may also not be appropriate for adults over the age of 70 years .	Eat mostly reduced fat milk, cheese and yoghurts. Reduced fat milk not suitable for children under 2. other sections of the DGs emphasise that this is only as a full milk drink for children this age.
Australian Dietary Guidelines [3]	67	Guideline 3: Limit intake of foods containing saturated fat,	Guideline 3: Limit intake of foods containing saturated fat , added salt, added sugars and alcohol.	Identifies that low fat diets are not suitable for children under the age of 2 years. Does not provide clear guidance on the best types of fats for children under 2.

Source	Page	Document or webpage title	Message/s	Comments
		added salt, added sugars and alcohol	<p>a. Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.</p> <ul style="list-style-type: none"> • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Low fat diets are not suitable for children under the age of 2 years. <p>Summary This Guideline emphasises the importance of limiting intake of foods and drinks high in saturated fat, added salt, added sugars and alcohol, based on evidence that these foods are associated with increased risk of obesity and/or chronic diseases. Replacing dietary saturated fat with monounsaturated and polyunsaturated fats is associated with improved blood lipid profiles and reduced risk of cardiovascular disease.</p>	Also suggests that intake of foods that are high in saturated fats that can't be separated out, e.g. cakes and pastries, should be limited.
Australian Dietary Guidelines [3]	68	Guideline 3: 3.1 Limit intake of foods high in saturated fat 3.1.1 Setting the scene	<p>Fat is a nutrient in food but the term 'fats' has also been applied to whole foods (e.g. butter, margarine and oils). Foods known as fats can also be ingredients in other foods (e.g. cakes and biscuits) or added as a culinary adjunct (e.g. oil in cooking or dressings). Both the amount and type of fat need to be carefully considered as all types of fat provide kilojoules and the proportion of total fat in a diet influences energy intake, which may have an impact on weight management. As people choose to eat foods, rather than food components or nutrients, the focus of this guideline recommendation is on foods containing fats, not fatty acids per se. As a general message to the public, limiting total dietary saturated fat remains the best guide.</p> <p>Fatty acids include SFAs, monounsaturated fatty acids (MUFAs) or polyunsaturated fatty acids (PUFAs). MUFAs and PUFAs with one or more double bonds in the trans configuration are known as trans-fatty acids (TFAs). Omega fatty acids (omega-3 and omega-6 PUFAs) are sub-classes of PUFAs. The essential fatty acids (which humans do not make) are considered to be linoleic acid (omega-6</p>	<p>This identifies fat as an ingredient in food or as an added fat; avoids mention of fat which is an intrinsic component of foods such as full cream milk.</p> <p><i>Message is to limit total dietary saturated fat – people choose to eat food not nutrients.</i></p> <p>Different technical names are used for different types of fats.</p> <p>NRV recommends dietary intake levels of total fat, saturated/trans fats and omega-6 / omega-3</p>

Source	Page	Document or webpage title	Message/s	Comments
			<p>PUFA) and alpha-linolenic acid (omega-3 PUFA). Fish is the predominant source of two omega-3 LCPUFAs, eicosapentaenoic acid (EPA) (20:5) and docosahexaenoic acid (DHA) (22:6). Grass-fed meat, kangaroo and offal contain small quantities of these omega-3 LCPUFAs as well as another, docosapentaenoic acid (DPA) (22:5).</p> <p>The NRV Document recommends that:</p> <ul style="list-style-type: none"> • total fat account for 20–35% of energy (kilojoule) intake • total SFAs & trans fats comprise ≤ 10% of energy intake • 4–10% of energy comes from linoleic acid (omega-6 PUFA) & 0.4–1% from alpha-linolenic acid (omega-3 PUFA). 	
Australian Dietary Guidelines [3]	69	Guideline 3: 3.1.2 The evidence for 'limit intake of foods high in saturated fat'	<p>The intake of trans fats is low in Australia and consequently there is no specific recommendation to limit their intake compared to current intake.</p> <p>Established evidence:</p> <ul style="list-style-type: none"> • Saturated fat is the strongest dietary determinant of plasma LDL concentration. • Replacing saturated fat with polyunsaturated and monounsaturated fats is associated with improved blood lipids related to CVD. <p>Higher consumption of omega-3 LCPUFA fat (intake amount not specified) is associated with reduced risk of dementia (Grade C)</p>	<p>This section provides data that is highly relevant to the current project so details are included in the body of the report section 4.1.2.1</p> <p>The two “established evidence” statements were based on the information in the NRVs (NHMRC 2006)</p> <p>Note no specific recommendation regarding trans fats. Both trans fats and saturated fats are mentioned on the previous page with reference to the NRVs but not in the actual guideline.</p>
Australian Dietary Guidelines [3]	70	Guideline 3: 3.1.2 The evidence for 'limit intake of foods high in saturated fat' (continued)	<p>Details the findings of the systematic reviews around fats as nutrients as well as foods, including the more nutrient-based findings of dietary relationships with cardiovascular disease, type 2 diabetes, excess weight gain, hypertension, cancer and dementia.</p>	<p>This section provides data that is highly relevant to the current project so details are included in the body of the report section 4.1.2.1</p> <p>Results are more relevant to the NRVs than the ADGs.</p>
Australian Dietary Guidelines [3]	71-72	Guideline 3: 3.1.4 Practical considerations: limit intake of foods high in saturated fat	<p>Fats are found in many foods in the five food groups especially nuts and seeds, legumes/beans, avocado, oats, fish, meat (lean meats), poultry, eggs, milk and cheese. Omega-3 LCPUFA intake can be increased by eating according to the Foundation Diets and Total Diets. When eating meals outside the home, lower-fat menu</p>	<p>Describes where dietary fat comes from in the diet, identifying food sources. Tables provides serves and serve sizes but not in practical measures (e.g. tsp instead of g). Also table has not examples of PUFA/MUFA spreads or nuts.</p>

Source	Page	Document or webpage title	Message/s	Comments
			<p>choices are preferable. Dietary fat included in the Foundation Diets comes mainly from fish, lean meats, poultry and milk, yoghurt and cheese products, with a small allowance of unsaturated oils/fats/spreads. Where more energy is required in moving from Foundation to Total Diets, additional serves of these and/or other foods containing fats can be included, such as additional nuts and seeds, unsaturated spreads and oils, and/or discretionary foods. where possible, the best choices are foods where unsaturated fats exist in greater quantities than saturated fats.</p> <p>Foods containing predominantly saturated fat such as butter, cream, cooking margarine, coconut and palm oil, many biscuits, cakes, pastries, pies, desserts, confectionery, processed meats and some commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks should be limited.</p> <p>Increasing the proportion of unsaturated fats in the diet can be achieved by choosing vegetables, fruit, lean meats and low fat milk, yoghurt and cheese products, nuts and seeds and using small amounts of unsaturated spreads and oils. Sunflower and safflower seed, soybean, cottonseed, sesame, corn and grape seed and the spreads and oils made from them as well as walnuts contain predominantly PUFAs. Canola seeds, nuts, peanuts, rice bran, avocados and olives and the oils and spreads made from them, contain mainly MUFAs.</p> <p>Quantitative data are provided in tables 3.2 (Recommended allowance for number of serves of unsaturated spreads and oils per day) and 3.3 (Standard serve size equivalents of unsaturated spreads and oils).</p>	
Australian Dietary Guidelines [3]	85	Guideline 3: 3.5 Practical guide for Guideline 3	<p>Table 3.7: Considerations in advising people from specific groups to limit intake of foods containing saturated fat, added salt, added sugars and alcohol.</p> <p>Infants: When solid foods are introduced, salt and sugar should not be added to prepared food and the salt and sugar content of ready-made foods should be checked.</p> <p>Children and adolescents: Introducing healthy eating patterns in early childhood influences dietary patterns in later years, however</p>	The types of fats are not mentioned in this section.

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			reduced fat milk, yoghurt and cheese products are not recommended for children < 2yrs.	
Australian Dietary Guidelines [3]	130	Appendix G: Food, nutrition and environmental sustainability	G1 Key messages: Overconsumption is unsustainable Choose foods for health and sustainability – Dietary patterns in line with the recommendations in these Guidelines – <i>eating nutrient-dense foods and limiting consumption of discretionary foods high in saturated fat</i> , added sugars and added salt – provide health benefits and <i>reduce the environmental impact</i> associated with foods.	Limiting discretionary foods including those high in saturated fat reduces environmental impact. there was no mention of palm oil or different sources of fats such as plant or animal origin.
Australian Dietary Guidelines [3]	134	Appendix G: Food, nutrition and environmental sustainability	G5 Sustainability and food consumption Consumers can contribute to sustainability efforts through the dietary patterns they choose to follow. As the wealth of our nation has increased and the availability of food has shifted, the foods produced have also changed to meet consumer preferences. This has resulted in a move toward <i>greater consumption of processed foods that are high in saturated fat</i> , added sugars and added salt. It is suggested that changing consumer food choices can make a bigger difference to overall household sustainability than reducing water and energy use. Therefore, <i>avoiding overconsumption of food and food waste</i> should form the <i>primary areas of focus</i> by health professionals in <i>communicating sustainable food consumption habits</i> .	Primary sustainable food message is avoid overconsumption of food and food waste.
Australian Dietary Guidelines [3]	144	Glossary	Cholesterol: Cholesterol, chemically a sterol, occurs in all the cell membranes of land animals. Brains and egg yolks are very rich in cholesterol, oils and fats from plants never contain it. <i>Eating cholesterol does not necessarily increase cholesterol in human blood plasma</i> because when it is absorbed the liver tends to reduce its own endogenous cholesterol synthesis. About half the body's cholesterol is made in the body from acetate.	Notes eating foods high in cholesterol does not necessarily increase blood cholesterol levels. Unclear why this is mentioned in Glossary but not featured in the relevant mechanisms sections within the guidelines.
Australian Dietary Guidelines [3]	144	Glossary	Discretionary foods: This includes foods and drinks not necessary to provide the nutrients the body needs, but that may add variety., many of these are <i>high in saturated fats</i> , sugars, salt and/or alcohol, and are therefore described as energy dense. They	Notes clearly that discretionary foods are not a necessary part of the diet and should be eaten only sometimes in small amounts.

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			can be included sometimes in small amounts by those who are physically active, but are not a necessary part of the diet . Foods in this category include cakes, biscuits; confectionary, chocolate; pastries, pies; ice confections, butter, cream, and spreads which contain predominantly saturated fats; potato chips, crisps and other fatty or salty snack foods; sugar-sweetened soft drinks and cordials, sports and energy drinks and alcoholic drinks.	
Australian Dietary Guidelines [3]	144	Glossary	Fats: Most of the fats in foods are triglycerides, made up of a unit of glycerol (glycerine) combined with three fatty acids, which may be the same or different. Differences between fats are largely a consequence of the fatty acids they contain, which together make up 90% of the weight of the molecule. Fats in the diet can be 'visible' or 'invisible' . Among visible fats are butter, margarine, cooking oils, and the fat on meat. Invisible fats occur in foods such as cheese, sauces, mayonnaise, biscuits, cakes, pastries and nuts. In most diets, about half the fats are visible and half invisible . Fats are the most concentrated form of energy, providing 37 kilojoules per gram. They are the chemical form in which most of the energy reserve of animals and some seeds is stored. Cholesterol, a lipid, has important functions in the body as part of all cell membranes, part of the myelin in the brain and nervous system, and the starting material for synthesis in the body of bile acids and adrenocortical and sex hormones. Cholesterol can accumulate in blood and in the inner walls of arteries, leading to disease.	Visible and invisible fats are described in the Glossary, but these terms are not used within the main body of the guidelines. they may have some utility to assist with messaging around food consumption.
Australian Dietary Guidelines [3]	145	Glossary	Grain foods: Refers to the entire class of cereal/grain foods, including whole or partially processed cereal grains (e.g. rice, oats, corn and barley), breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley. It excludes cereal or grain-based products with a significant amount of added fat and sugar, such as cakes, pastries, and biscuits.	The term 'significant amount of added fat' is not defined and while examples are provided, greater detail may be required to avoid ambiguity.
Australian Dietary Guidelines [3]	146	Glossary	Limit: Limit is used to emphasise the importance of limiting intake of foods and drinks high in saturated and trans fats , added salt, added sugars and alcohol, due to evidence that these foods are	The term 'limit' may be ambiguous to some consumers. Unusually for the DGs, includes trans fats in this statement.

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			associated with increased risk of obesity and/or chronic disease, including CVD, type 2 diabetes and/or some cancers.	
Australian Dietary Guidelines [3]	146	Glossary	Low fat food: Foods that claim to be 'low fat' must meet criteria before a manufacturer is allowed to print this on the food label. A 'low fat' or 'low in fat' product must contain no more than 3g of fat per 100g of food. A liquid must contain no more than 1.5g of fat per 100ml of liquid.	Glossary item is informed by food standard regulations rather than the evidence report or relationship between consumption and health impacts, and the scientific basis for this is not clear.
Australian Dietary Guidelines [3]	146	Glossary	Monounsaturated fatty acids (MUFAs): In chemical terms, MUFAs contain one unsaturated bond. MUFAs occur in considerable amounts in olive oil, canola oil and many kinds of nuts.	Provides background information. Includes no messaging around relationship between consumption and health impacts.
Australian Dietary Guidelines [3]	146	Glossary	Mostly: The term 'mostly' is derived from the Food Modelling System, where more than 50% of the food group was made up of a specific characteristic for example reduced fat varieties. This descriptor ensures that the variety of foods chosen not only meet nutrient needs but are also within individual energy requirements.	The definition of 'mostly' is derived from food models, hence dietary pattern data, rather than reflecting concern about any particular food.
Australian Dietary Guidelines [3]	147	Glossary	Omega-3 long chain polyunsaturated fatty acids (LCPUFAs): Omega-3 LCPUFAs have the first double bond in the n-3 position. The best known are those in fatty fish, their names abbreviated to EPA (20:5 eicosapentaenoic acid) and DHA (22:6 docosahexaenoic acid). Another omega-3 LCPUFA, ALA (18:3 alpha-linolenic acid), occurs in considerable amounts in canola and flaxseed oils and in walnuts. Omega-3 LCPUFAs are suggested to be protective in cardiovascular health.	Note many terms are used for omega-3 LCPUFAs; provided as background but could be confusing for consumers.
Australian Dietary Guidelines [3]	147	Glossary	Pasta and noodles: Includes a wide range of Italian and Asian products based on sheets of dough made from flours – usually wheat or rice flour – and water, sometimes with egg added. Examples are plain spaghetti, lasagne, fettuccine, udon and Hokkien noodles, rice paper and wonton wrappers. The term excludes some instant noodles and flavoured pasta mixes with significant amounts of added fat and salt.	Instant noodles and flavoured pasta mixes high in added fat are excluded from this group. Need to say these are discretionary foods.

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Australian Dietary Guidelines [3]	147	Glossary	Polyunsaturated fatty acids (PUFAs): PUFAs contain two or more (poly) double (unsaturated) bonds. Foods with a high PUFA content are liquid at room temperature that is, they tend to be 'oils'. The most common PUFA is linoleic acid (18:2) whose first double bond is in the n-6 position. It occurs in seed oils including sunflower oil, safflower oil and corn oil . Smaller amounts of PUFAs with the first double bond in the n-3 position also occur in the diet. The best known are those in fatty fish , their names abbreviated to EPA (20:5 eicosapentaenoic) and DHA (22:6docosahexaenoic). Another omega-3 PUFA, ALA (18:3 alpha-linolenic) , occurs in considerable amounts in canola and flaxseed oils and in walnuts .	Many terms used for PUFAs.
Australian Dietary Guidelines [3]	147	Glossary	Reduced fat products: For a food to be labelled ' reduced fat ', it must contain at least 25% less fat than is present in the same quantity of the reference food.	Glossary item is informed by food standard regulations rather than the evidence report and the scientific basis for this is not clear.
Australian Dietary Guidelines [3]	147	Glossary	Refined grain (cereal) foods: Refers to highly processed grain (cereal) foods where the outer layer of the grain is lost during processing. These also include cereal or grain-based products with a significant amount of added fat and sugar, such as cakes, pastries, and biscuits.	Term 'significant' is ill-defined. Need to state that those with significant added fat are discretionary foods.
Australian Dietary Guidelines [3]	148	Glossary	Saturated fatty acids (SFAs): In chemical terms, SFAs contain no double bond – that is, they are fully saturated with hydrogen. Foods that predominantly comprise SFAs are usually solid at room temperature (e.g. butter, fat on meat). SFAs are the main type of fatty acid in milk, cream, butter and cheese, in some meats (most of the land animal fats), and can also be found in considerable amounts in some oils such as in palm and coconut oil . When the SFAs palmitic (16:0), myristic (14:0) and lauric (12:0) predominate in the diet they tend to raise plasma cholesterol .	First mention of palm oil; nothing is mentioned in sustainability section yet frequent media around this topic.
Australian Dietary Guidelines [3]	148	Glossary	Trans-fatty acids (TFAs): TFAs are a form of unsaturated fatty acid that is straight at a double bond rather than bent, as in the usual cis form. They are not common in nature but are formed during some manufacturing processes, such as when edible oils are hydrogenated to make cooking margarines . Small amounts of trans-fatty acids occur naturally in meats and dairy foods.	Consistent messaging around TFAs is missing in the Dietary Guideline resources.

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Australian Dietary Guidelines [3]	148	Glossary	Unsaturated fatty acid: See monounsaturated fatty acids and polyunsaturated fatty acids .	
ADGs Educator Guide [5]	5	Chapter 1 What is the Eat for Health Program ADGs – Guideline 2:	Enjoy a wide variety of nutritious foods from these five groups every day: <ul style="list-style-type: none"> • Plenty of vegetables • Fruit • Grain (cereal) foods • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years). 	Predominantly this guideline focuses on foods; the mention of nutrients like 'reduced fat' could be confusing for some consumers. 'Lean meats' may need definition.
ADGs Educator Guide [5]	5	Chapter 1 What is the Eat for Health Program ADGs – Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.	<ul style="list-style-type: none"> • Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Low fat diets are not suitable for children under the age of 2 years. 	Guideline contains a mix of food-based and nutrient-based recommendations.
ADGs Educator Guide [5]	7	Chapter 2 The nutritional rationale underpinning the Eat for Health Program Table 1: Nutritional characteristics of the Five Food Groups	<ul style="list-style-type: none"> • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans – main distinguishing nutrients includes long chain omega 3 fatty acids; other distinguishing nutrients includes essential fatty acids • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat – main distinguishing nutrients includes no fats; other distinguishing nutrients includes fat 	Some inconsistencies apparent as meat group specifies types of fats, whereas milk group only identifies fa (may be as this is mostly saturated-but benign- in the latter foods
ADGs Educator Guide [5]	8	Chapter 2 Messages and visuals used in the Eat for Health Program: Enjoying healthy choices	Some foods containing saturated fat may increase blood cholesterol levels, with high levels being a risk factor for cardiovascular disease. Choosing foods from a variety of biological sources (both animal and vegetable) helps ensure a variety of fats in the diet and balance of the different types of fats.	Mentions different sources of fats. Strong food-based message about eating a variety of foods. Reinforces notion that food-based messaging may simplify dietary recommendations for consumers.

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ADGs Educator Guide [5]	8	Chapter 2 Messages and visuals used in the Eat for Health Program: What about “healthy” fats such as unsaturated spreads and oils?	Fats can increase the taste and textural pleasure of food and some oils made from fruits, seeds, grains or nuts contain fatty acids that are essential for health. Foods containing essential fatty acids may also provide vitamins A, D and E. The types of fats we include have different effects on our health, but all fats are high in kilojoules , so the types and amounts of foods containing fat should be chosen carefully. All Australians should include some foods that contain unsaturated fats in their usual dietary patterns. The amounts depend on individual energy needs. The dietary modelling used to inform the Eat for Health Program included an allowance for unsaturated spreads and oils to be included in the diet .	Plant based foods contain healthy fats. Amount of foods containing fats to eat depends on energy needs. There is an allowance for unsaturated spreads and oils.
ADGs Educator Guide [5]	8	Chapter 2 Messages and visuals used in the Eat for Health Program: What are discretionary choices?	Foods included as ‘Discretionary choices’ are not needed to meet nutrient requirements and do not fit into the Five Food Groups. Many discretionary choices are also high in kilojoules, saturated fat, added sugars, added salt or alcohol .	Reinforces that many discretionary foods are high in saturated fat and energy and should only be eaten sometimes and in small portions.
ADGs Educator Guide [5]	9	Chapter 2 Messages and visuals used in the Eat for Health Program: Foods illustrated for each of the Five Food Groups	The ranges of foods illustrated in the Five Food Groups in the Eat for Health Program were chosen to: reflect foods commonly consumed in Australia; represent the range of foods within each food group; be affordable; reflect the nature of the food supply, including fresh and packaged foods; offer ideas for shifts towards healthier eating, that include increasing variety and using wholegrain and lower fat products ; be consistent with the recommendations for choosing foods that are high in dietary fibre, low in saturated fat , without added sugars/minimal or no added salt.	Inconsistent with most other sections of DGs as it includes a focus on low fat diet overall, rather than just on reduction of saturated fat.
ADGs Educator Guide [5]	14	Chapter 3 The Five Food Groups: Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties	Grain (cereal) foods which have relatively large amounts of added fats and sugars and/or salt such as cakes, muffins and biscuits are not included in this group but are classified under discretionary choices.	Reinforces that grain (cereal) foods high in added fats are classified as discretionary foods and should only be eaten sometimes.
ADGs Educator Guide [5]	16-17	Chapter 3 The Five Food Groups: Lean meats and poultry, fish, eggs, tofu, nuts	Fish and seafood are a valuable source of long chain omega-3 polyunsaturated fatty acids , although the amount varies with the species. Fish such as herrings, sardines and salmon and all	Lack of definition of ‘lean meat’ e.g. no mention of cutting off visible fat. Notes that high fat processed meats are classified as discretionary

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		and seeds, and legumes/beans	<p>Australian fish and seafood are regarded as 'good sources'. Some imported fish may have lower levels of long chain omega-3 polyunsaturated fatty acids compared with Australian seafood. Regular consumption of fish may be associated with reduced risk of heart disease, stroke, dementia and age-related macular degeneration. Include about 2 serves of fish or seafood a week. Meat from grass-fed animals also contains some long chain omega-3 fatty acids but at a lower level than in most fish. Fresh, frozen and canned varieties of meats, poultry or fish are in this group, but choose canned varieties that are low in fat and without added salt. Processed meats high in fat or sodium such as salami or mettwurst are not part of this food group. They are classified as discretionary choices. Sausages vary in their composition, and may include cereals and other components. They may count as a meat serve if they are salt and fat reduced and made mostly from lean meat, or as a discretionary choice for regular sausages.</p> <p>Nuts and seeds can provide protein, essential fatty acids and a range of minerals, vitamins and phytochemicals but servings are smaller due to their more concentrated kilojoule content.</p>	foods, but presumes this is saturated fat so is unclear.
ADGs Educator Guide [5]	17-19	Chapter 3 The Five Food Groups: Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat	<p>Milk, yoghurt and cheeses are important foods and their consumption may help reduce risk of high blood pressure, heart disease, stroke, type 2 diabetes and some cancers. the milk, yoghurt, cheese group can increase the saturated fat and energy content of a diet if mostly full fat products are chosen. Therefore, the best choices for most people two years and over are low or reduced fat milk, yoghurts and cheeses. Full fat cheese should be limited to two to three serves a week, or replaced with cheeses that have reduced levels of fat. Other milk-based products such as ice cream and fromage fraise and dessert style custards contribute some calcium to the diet, but may be relatively high in saturated fat and added sugar. These products are therefore classified under as discretionary choices. For most adults, the best choices are reduced fat milk, yoghurts and cheeses. Regular full fat milk, yoghurts and cheese varieties should be used between the ages of 1–2 years.</p>	The term 'best choices' requires justification given the findings of the evidence report and that low fat milk, cheese and yoghurt are encouraged due to the results of food modelling rather than specific problems with full fat options of these foods.

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ADGs Educator Guide [5]	21	Chapter 4 What about other foods and drinks: Allowance for unsaturated spreads and oils	<p>Fats in the diet provide energy and some provide essential unsaturated fatty acids and fat-soluble vitamins such as vitamins A and E. Fats can be categorised as saturated fats, polyunsaturated fats and monounsaturated fats. Polyunsaturated fats can be further divided into omega-3 and omega-6 types.</p> <p>Where possible, replace foods containing saturated fats with foods that have polyunsaturated and monounsaturated fats, which can benefit blood cholesterol levels. Essential unsaturated fatty acids are found in foods from the main food groups, especially from seeds, nuts, avocado, fish, lean grass-fed meat, poultry, some eggs, legumes/beans and oats. sunflower, safflower, soybean, cottonseed, sesame, corn and grapeseed oils, and spreads made from these oils, contain predominantly polyunsaturated fats. Canola, macadamia nut, peanut, rice bran and olive oils, and spreads made from these oils, contain mainly monounsaturated fats.</p> <p>Including small amounts of polyunsaturated and monounsaturated spreads and oils in cooking or in salad dressing or using a spread, or small amounts of nuts and seeds, can provide essential fatty acids and some fat-soluble vitamins.</p> <p>How much unsaturated spreads & oils can I include in my diet?</p> <p>The modelling used to inform the Eat for Health Program included an allowance of unsaturated spreads and oils or extra quantities of the nuts and seeds from which they are made as follows:</p> <ul style="list-style-type: none"> • 4 serves [28–40g] per day for men less than 70 years of age • 2 serves [14–20g] per day for women over 18 years of age and men older than 70 years of age • 2 serves [14–20g] per day for adolescents 14–18 years of age • 1½ serves [11–15g] per day for children 12–13 years • 1 serve [7–10g] per day for children 3–12 years of age • ½ serve [4–5g] per day for children 2–3 years of age. <p>What is a serve of unsaturated spreads and oils (250kJ)?</p> <ul style="list-style-type: none"> • 10g polyunsaturated spread • 10g monounsaturated spread 	Reinforces recommendation to replace foods containing saturated fats with foods that have unsaturated fats. Use small amounts of unsaturated spreads and oils. Provides serves for spreads, oils and quantities of the nuts and seeds from which these are derived.

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			<ul style="list-style-type: none"> 7g monounsaturated or polyunsaturated oil, for example olive, canola or sunflower oil 10g tree nuts or peanuts or nut pastes/butters. 	
ADGs Educator Guide [5]	22	Chapter 4 What about other foods and drinks: Discretionary choices	Discretionary choices are high in saturated fat (natural or added) and/or added sugars or salt or alcohol. These foods and drinks can contribute many kilojoules and displace other more nutritious foods from the diet. Consumption of foods and drinks high in saturated fat , added sugars, added salt or alcohol may be associated with increased risk of obesity and chronic disease such as heart disease, stroke, type 2 diabetes, and some forms of cancer. The ideal choice is to make up any extra energy needs from foods in the basic Five Food Groups, particularly wholegrain cereals, vegetables, including legumes/beans and fruit. some discretionary choices can be used. For most people 0 to 3 serves a day will be suitable , depending on age, height and activity level.	Provides suggested limit for intake of discretionary foods.
ADGs Educator Guide [5]	23	Chapter 4 What about other foods and drinks: Discretionary choices – What types of food are included in this category? Table 7: Examples of foods and drinks in the 'discretionary choices' category	<p>High saturated fat = Bacon, ham, butter, cream, ghee, certain tacos, nachos and enchilada, commercially fried foods, commercial burgers, crisps & extruded snacks, dairy blends, frankfurts, fried hot chips, meat pie or pastie, pastry, pizza, processed meats, quiche, salami/mettwurst, sausages (regular), some crackers, some sauces, spring roll.</p> <p>High saturated fat and added sugars = biscuits, cakes, chocolate/bars, dessert style custards, doughnuts, iced buns, ice cream, muesli bars, puddings, slices, some confectionary, some sauces, sweet muffins, sweet pastries, sweet pies and crumbles.</p>	Provides examples of discretionary foods, including those high in saturated fat and serving sizes. None of these foods are necessary for a healthy diet.
ADGs Educator Guide [5]	27-35	Chapter 5 Energy and nutrient requirements: Foundation & Total Diets	This chapter outlines the daily serving sizes for each of the five food groups along with the allowance for unsaturated spreads or oils and nuts or seeds for the Foundation Diets of children, adolescents and adults. It also provides a guide to the additional energy required to account for height, age and physical activity level to achieve Total Diets. Smaller, less active individuals will have Foundation Diets that are the same as Total Diets and cannot consume any additional foods beyond the Foundation Diets.	Reinforces that total diets include foods from the five food groups plus unsaturated fat allowance plus additional serves for taller more active individuals (5 food groups or unsaturated spreads and oils or discretionary choices).

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ADGs Educator Guide [5]	45	Chapter 8 Achieving healthy dietary patterns: How to eat a diet low in saturated fat	<p>Saturated fats can be harmful to health by raising cholesterol levels and increasing risk of heart disease. Saturated fats are found in butter, lard and dripping, coconut and palm kernel oils, fatty meats, some vegetable oils (hydrogenated for use in baked foods and processed foods). Lesser amounts are found in meat and full fat milk products, especially cheese.</p> <p>Unsaturated fats are an important part of a healthy diet by helping reduce the risk of heart disease and lowering cholesterol levels (among other health benefits) when they replace saturated fats in the diet.</p> <p>Low fat diets (even those low in saturated fat) are not suitable for children less than 2 years old due to their relatively high energy requirements.</p> <p>Discretionary choices</p> <p>Limit foods which contain high levels of saturated fats such as:</p> <ul style="list-style-type: none"> • Butter, cream, lard and dripping, coconut and palm or palm kernel oils • Cakes, biscuits, pastries, chocolate, potato crisps and other high-fat snack products • Processed meats such as salami or mettwurst • Fatty meats, including most sausages • Takeaway foods, for example commercial burgers, pizzas, chicken, chips and fried foods cooked in hydrogenated vegetable oil. <p>Five Food Groups</p> <p>Within the Five Food Groups, saturated fat is mainly found in meat, poultry, eggs, milk, yoghurt and cheese.</p> <p>To reduce the saturated fat from these groups:</p> <ul style="list-style-type: none"> • Trim visible fat from meats • Remove skin and fat pads from chicken • Use reduced fat milk, yoghurt and cheese (children under two years should use full fat milk products as they need the extra energy for growth) 	Reinforces that to support good health, replace foods containing saturated fats with foods that have unsaturated fats and use small amounts of unsaturated spreads and oils.

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			<ul style="list-style-type: none"> Use small amounts of unsaturated spreads or oils in preference to other cooking fats. 	
ADGs Educator Guide [5]	49	Chapter 8 Achieving healthy dietary patterns: How to understand food labels: What to look for...	<p>Total Fat: Generally, choose foods with less than 10g per 100g. For milk, yogurt and ice cream, choose less than 2g per 100g. For cheese, choose less than 15g per 100g.</p> <p>Saturated Fat: Aim for the lowest per 100g. Less than 3g per 100g.</p> <p>Ingredients: Listed from greatest to smallest by weight. Use this to check the first three ingredients for items high in saturated fat, sodium (salt) or added sugar.</p> <p>Other names for ingredients high in saturated fat: Animal fat/oil, beef fat, butter, chocolate, milk solids, coconut, coconut oil/milk/cream, copha, cream, ghee, dripping, lard, suet, palm oil, sour cream, vegetable shortening.</p>	This section focuses on food labels and hence fats as nutrients only. Inconsistent with other sections of the DGs, it supports assessment (and implies limiting) of total fat intake as well as saturated fat. Does not differentiate different sources of fat, e.g. that saturated fat in milk, cheese and yoghurt is relatively benign (see ADGs Evidence report).
ADGs Educator Guide [5]	53	Glossary	Cholesterol: Cholesterol, chemically a sterol, occurs in all the cell membranes of land animals. Brains and egg yolks are very rich in cholesterol, oils and fats from plants never contain it . Eating cholesterol does not necessarily increase cholesterol in human blood plasma because when it is absorbed the liver tends to reduce its own endogenous cholesterol synthesis. About half the body's cholesterol is made in the body from acetate.	As per comments on Cholesterol entry in the Glossary in the ADGs
ADGs Educator Guide [5]	54	Glossary	Discretionary choices: This includes foods and drinks not necessary to provide the nutrients the body needs, but may add variety. 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 . Foods in this category include cakes, biscuits; confectionary, chocolate; pastries, pies; ice confections, butter, cream, and spreads which contain predominantly saturated fats; potato chips, crisps and other fatty or salty snack foods; sugar-sweetened soft drinks and cordials, sports and energy drinks and alcoholic drinks.	As per comments on the Discretionary Choices entry in the Glossary in the ADGs

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ADGs Educator Guide [5]	54	Glossary	Fats: Most of the fats in foods are triglycerides, made up of a unit of glycerol (glycerine) combined with three fatty acids, which may be the same or different. Differences between fats are largely a consequence of the fatty acids they contain, which together make up 90% of the weight of the molecule. Fats in the diet can be 'visible' or 'invisible'. Among visible fats are butter, margarine, cooking oils, and the fat on meat. Invisible fats occur in foods such as cheese, sauces, mayonnaise, biscuits, cakes, pastries and nuts. In most diets, about half the fats are visible and half invisible. Fats are the most concentrated form of energy, providing 37 kilojoules per gram. They are the chemical form in which most of the energy reserve of animals and some seeds is stored. Cholesterol, a lipid, has important functions in the body as part of all cell membranes, part of the myelin in the brain and nervous system, and the starting material for synthesis in the body of bile acids and adrenocortical and sex hormones. Cholesterol can, , accumulate in blood and in the inner walls of arteries, leading to disease.	As per comments on the Fats entry in the Glossary in the ADGs
ADGs Educator Guide [5]	55	Glossary	Limit: limit is used to emphasise the importance of limiting intake of foods and drinks high in saturated and trans fats , added salt, added sugars and alcohol, due to evidence that these foods are associated with increased risk of obesity and/or chronic disease , including cardiovascular disease, type 2 diabetes and/or some cancers.	As per comments on the Limit entry in the Glossary in the ADGs
ADGs Educator Guide [5]	55	Glossary	Low fat food: Foods that claim to be 'low fat' must meet criteria before a manufacturer is allowed to print this on the food label. A 'low fat' or 'low in fat' product must contain no more than 3g of fat per 100g of food . A liquid must contain no more than 1.5g of fat per 100ml of liquid .	As per comments on the Low fat food entry in the Glossary in the ADGs
ADGs Educator Guide [5]	55	Glossary	Monounsaturated fatty acids (MuFAs): In chemical terms, MuFAs contain one unsaturated bond. MuFAs occur in considerable amounts in olive oil, canola oil and many kinds of nuts .	As per comments on the Monounsaturated fatty acids entry in the Glossary in the ADGs

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ADGs Educator Guide [5]	55	Glossary	Mostly: The term 'mostly' is derived from the Food Modelling System, where more than 50% of the food group was made up of a specific characteristic for example reduced fat varieties . This descriptor ensures that the variety of foods chosen not only meet nutrient needs but are also within individual energy requirements.	As per comments on the Mostly entry in the Glossary in the ADGs
ADGs Educator Guide [5]	56	Glossary	Omega-3 long chain polyunsaturated fatty acids (LCPuFAs): Omega-3 LCPuFAs have the first double bond in the n-3 position. The best known are those in fatty fish , their names abbreviated to EPA (20:5 eicosapentaenoic acid) and DHA (22:6 docosahexaenoic acid). Another omega-3 LCPuFA , AIA (18:3 alpha-linolenic acid), occurs in considerable amounts in canola and flaxseed oils and in walnuts . Omega-3 LCPuFAs are suggested to be protective in cardiovascular health.	As per comments on the Omega-3 long chain polyunsaturated fatty acids (LCPuFAs) entry in the Glossary in the ADGs
ADGs Educator Guide [5]	56	Glossary	Polyunsaturated fatty acids (PuFAs): PuFAs contain two or more (poly) double (unsaturated) bonds. Foods with a high PuFA content are liquid at room temperature that is, they tend to be 'oils' . The most common PuFA is linoleic acid (18:2) whose first double bond is in the n-6 position. It occurs in seed oils including sunflower oil, safflower oil and corn oil. Smaller amounts of PuFAs with the first double bond in the n-3 position also occur in the diet. The best known are those in fatty fish , their names abbreviated to EPA (20:5 eicosapentaenoic) and DHA (22:6 docosahexaenoic). Another omega-3 PuFA, AIA (18:3 alpha-linolenic), occurs in considerable amounts in canola and flaxseed oils and in walnuts .	As per comments on the Polyunsaturated fatty acids (PuFAs) entry in the Glossary in the ADGs.
ADGs Educator Guide [5]	56	Glossary	Reduced fat products: For a food to be labelled 'reduced fat', it must contain at least 25% less fat than is present in the same quantity of the reference food.	As per comments on the Reduced fat products entry in the Glossary in the ADGs.
ADGs Educator Guide [5]	57	Glossary	Saturated fatty acids (SFAs): In chemical terms, SFAs contain no double bond—that is, they are fully saturated with hydrogen. Foods that predominantly comprise SFAs are usually solid at room temperature (e.g. butter, fat on meat). SFAs are the main type of fatty acid in milk, cream, butter and cheese, in some meats (most of the land animal fats), and can also be found in considerable amounts in some oils such as in palm and coconut oil . When the	As per comments on the Saturated fatty acids (SFAs) entry in the Glossary in the ADGs.

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			SFAs palmitic (16:0), myristic (14:0) and lauric (12:0) predominate in the diet they tend to raise plasma cholesterol .	
ADGs Educator Guide [5]	57	Glossary	Unsaturated fatty acids: See monounsaturated fatty acids and polyunsaturated fatty acids.	As per comments on the Unsaturated fatty acids entry in the Glossary in the ADGs.
Eat for Health Australian Dietary Guidelines Summary 2013	2	Introduction: What influences our food choices?	The foods that are most readily available in our community also tend to be the discretionary choices that are high in saturated fat , added sugars and salt and alcohol.	Reinforces that discretionary foods high in saturated fat are among the most readily available foods in Australia yet should be avoided.
Eat for Health Australian Dietary Guidelines Summary 2013	3	Introduction: Most Australians need more...	<ul style="list-style-type: none"> • Vegetables and fruit • Grain (cereal) foods • Reduced fat milk, yoghurt and cheese varieties (reduced fat milks are not suitable for children under the age of 2 years as a main milk drink). • Lean meats and poultry, fish, eggs, nuts and seeds and legumes/beans (except many Australian men would benefit from eating less red meat). • Water. 	As per comments on Guideline 2 in the ADGs
Eat for Health Australian Dietary Guidelines Summary 2013	3	Introduction: Most Australians need less...	Meat pies, sausage rolls and fried hot chips, potato crisps, savoury snacks, biscuits and crackers, processed meats like salami, bacon and sausages, cakes, muffins, sweet biscuits and muesli bars, confectionary (lollies) and chocolate, ice-cream and desserts, cream and butter, jam and honey, soft drinks, cordial, energy drinks and sports drinks, wine, beer and spirits.	Provides detailed examples of high saturated fat discretionary foods.
Eat for Health Australian Dietary Guidelines Summary 2013	3	Australian Dietary Guidelines: Guideline 2 Enjoy a wide variety of nutritious foods from these five food groups every day.	<ul style="list-style-type: none"> • Plenty of vegetables, • Fruit • Grain (cereal) foods • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat • And drink plenty of water. 	As per comments on Guideline 2 in the ADGs

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Eat for Health Australian Dietary Guidelines Summary 2013	3	Australian Dietary Guidelines: Guideline 3 Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.	<ul style="list-style-type: none"> • Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Low fat diets are not suitable for children under the age of 2 years. 	As per comments on Guideline 3 in the ADGs
Eat for Health Australian Dietary Guidelines Summary 2013	9	Guideline 1: To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs.	The good news is that most weight-related illness is preventable, or at least partly reversible, by eating suitable amounts of nutritious foods, avoiding foods and drinks high in saturated fat, added sugars and alcohol, and being physically active.	Unlike the main DGs document, these recommendations do mention saturated fat rather than total fat. This inconsistency could be confusing for some consumers.
Eat for Health Australian Dietary Guidelines Summary 2013	12	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day.	<ul style="list-style-type: none"> • Plenty of vegetables • Fruit • Grain (cereal) foods • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat • And drink plenty of water. <p>Foods are grouped by their type and their contribution of nutrients to Australian diets. Within each group, healthy choices are those that are lowest in saturated fats, added sugars and salt.</p>	As per comments on Guideline 2 in the ADGs
Eat for Health Australian Dietary Guidelines Summary 2013	13	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. Tips for variety.	<p>Choose a variety of colours of fresh vegetables and fruits. Buy fresh produce in season. Plan ahead and stock up on the basics:</p> <ul style="list-style-type: none"> • wholegrain breakfast cereal, wholegrain pasta, and brown rice and barley • reduced fat milk, yoghurt and cheese • lentils and beans like kidney beans and chickpeas • eggs, lean meats and poultry, fish 	As per comments on Guideline 2 in the ADGs re canned and frozen vegetables.

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			<ul style="list-style-type: none"> • frozen or canned foods without added saturated fat, added sugar or added salt. Include some meat-free meals each week. Use wholegrain cereals. Try new foods. Eat at home more often. When the food budget is tight, whole, unprocessed foods in season can be very economical. Using canned foods low in salt and sugar, or frozen vegetables.	
Eat for Health Australian Dietary Guidelines Summary 2013	14	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. Vegetables and fruit to limit.	Limit intake of fried vegetables such as potato and vegetable chips and crisps, which add extra kilojoules and salt. Chips and crisps are included in 'discretionary choices'.	Mentions cooking method, specifically frying, but doesn't mention the type of oil that is preferable.
Eat for Health Australian Dietary Guidelines Summary 2013	18	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. Go for grains.	Grain (cereal) foods which have high amounts of added saturated fats, added sugars and/or salt such as most cakes, muffins, pies, pastries and biscuits are not included in this group but are classified under 'discretionary choices'.	As per comments on Guideline 2 in the ADGS
Eat for Health Australian Dietary Guidelines Summary 2013	20	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. Choose lean meat and poultry, fish, eggs and/or plant-based alternatives.	Lean red meat is high in iron and can be an important food, especially for some groups including infants, children, women (particularly when pregnant) and athletes., regular consumption of larger quantities of red meat may be associated with increased risk of colorectal cancer. Fish, especially oily fish such as salmon and tuna, can be a valuable source of essential omega-3 fatty acids. Small quantities of these fatty acids are also found in lean grass-fed red meat, poultry and some eggs. Regular consumption of fish may help reduce risk of heart disease, stroke, dementia in older adults and macular degeneration in the eyes. Fresh, frozen and canned varieties of meats, poultry or fish are all suitable, but choose varieties that are low in salt and saturated fat. Processed meats such as salami, mettwurst, bacon and ham are not part of this food group. They are classified as discretionary choices because they are high in saturated fat and/or salt. Consuming	As per comments on Guideline 2 in the ADGs. Provides both food-based messaging with nutrient-based justification, which could be confusing for some consumers.

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			processed meat may be associated with an increased risk of colorectal cancer .	
Eat for Health Australian Dietary Guidelines Summary 2013	23	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. Include milk, yoghurt and cheese and/or alternatives – mostly reduced fat	Consumption of milk, yoghurt and cheese can protect us against heart disease and stroke , can reduce our risk of high blood pressure and some cancers , may reduce our risk of Type 2 diabetes and may contribute to stronger bones ., choosing mostly full fat varieties can increase the saturated fat and energy (kilojoule) content in the diet. A wide range of milk products of varying fat levels are now available in Australia. Some other milk products , such as ice-cream, can be relatively high in saturated fat and added sugars, so are classified under discretionary choices , together with cream and butter. Children under two years of age have relatively high energy requirements and are growing rapidly, so full cream milks, yoghurts and cheeses are recommended for them	Provides both food-based and nutrient-based advice. See above re need for consistency with evidence report that shows milk, cheese and yoghurt – regardless of fat/saturated fat content – protect against a range of chronic conditions.
Eat for Health Australian Dietary Guidelines Summary 2013	24	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. How much milk, yoghurt and cheese and/or alternatives should we eat every day?	Most Australians consume only about half the recommended quantity of milk products or alternatives, but consume too many full fat varieties of these foods and should increase their intake of reduced fat varieties . Full fat cheeses should be limited to 2–3 serves per week , and varieties which are lower in salt are preferable.	This guidance appears to be based on energy content rather than the food health relationships presented in the ADGs Evidence report.
Eat for Health Australian Dietary Guidelines Summary 2013	26	Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day. What about foods and drinks that are not part of the 5 groups?	Unsaturated spreads and oils Unsaturated spreads and oils appear in the bottom left-hand corner of the Australian Guide to Healthy Eating. These foods contain mostly unsaturated (polyunsaturated or monounsaturated) fats . Small amounts of unsaturated spreads and oils, or extra quantities of the nuts and seeds from which they are made may have health benefits and can be included in the diet. The amount of unsaturated spreads or oils, nuts or seeds included in usual dietary patterns is linked to individual energy needs. Discretionary choices 'Discretionary choices' are called that because they are not an essential or necessary part of healthy dietary patterns. Discretionary choices are high in kilojoules, saturated fat , added	Reinforces that unsaturated spreads and oils can have health benefits. Doesn't mention inclusion of the nuts and seeds from which these foods are derived. Emphasises foods high in saturated fat are discretionary foods, are not part of a healthy diet and should be eaten only sometimes and in small amounts.

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			sugars and/or salt or alcohol. Most Australians consume too many discretionary choices instead of choosing foods from the Five Food Groups. Examples of discretionary choices include: most sweet biscuits, cakes, desserts and pastries; processed meats and sausages; ice-cream and other ice confections; confectionary and chocolate; savoury pastries and pies; commercial burgers; commercially fried foods; potato chips, crisps and other fatty and/or salty snack foods; cream, butter and spreads which are high in saturated fats ; sugar-sweetened soft drinks and cordials, sports and energy drinks and alcoholic drinks.	
Eat for Health Australian Dietary Guidelines Summary 2013	28	Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.	<ul style="list-style-type: none"> • Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Low fat diets are not suitable for children under the age of 2 years. Dietary patterns featuring foods and drinks containing significant amounts of saturated fats, added salt, added sugars and alcohol are associated with increased risk of obesity and chronic diseases including heart disease, stroke, type 2 diabetes and some cancers. 	As per comments re Guideline 3 in the ADGs e.g. the word 'limit' may need clearer definition
Eat for Health Australian Dietary Guidelines Summary 2013	28-30	Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol. Not all fats are equal.	Fats can help make food more palatable and some oils contain unsaturated fats (polyunsaturated and monounsaturated) that are essential for health. But different types of fats have different effects on our health and all fats are high in kilojoules , so both the types and amounts of foods containing fat need to be chosen carefully . Fats can be classified as saturated, monounsaturated or polyunsaturated fats , depending on their chemical structure. Trans fats act like saturated fats in the body . Trans fats can be found naturally in the fat from meat and milk from certain animals and hydrogenated vegetable oils used to make some processed foods . The amount of trans fats in processed foods is declining in Australia and our overall intake is low., it is important to ensure that intake remains at its current low level. Saturated fats increase our	Provides more detail about different types of fats and fatty acids which, in a summary document, could be confusing for some consumers. Provides a mix of nutrient and food messaging and provides practical food examples. Mentions trans fats.

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			<p>risk of heart disease. It is important to replace foods containing saturated fats with foods that contain unsaturated fats, that is, either monounsaturated or polyunsaturated fats. All Australians should include some foods that contain unsaturated fats in their usual dietary patterns. The amount depends on our individual energy needs. Low-fat diets are not suitable for infants.</p> <p>What foods contain saturated fats? Saturated fats are found in: butter and cream, lard and dripping, coconut and palm kernel oils, biscuits, cakes, pastries and pies, processed meats, commercial burgers, pizzas and fried foods, potato chips and crisps, sausages, untrimmed meats, full cream dairy products, especially cheese.</p> <p>What foods contain unsaturated fats? Unsaturated fats (polyunsaturated and monounsaturated) fats are found in foods in the Five Food Groups, especially in: seeds, nuts, legumes/beans, avocado, oats. Foods with mostly polyunsaturated fats: sunflower and safflower seeds, soybeans, cottonseeds. Foods with mostly monounsaturated fats: canola seeds, most nuts, rice bran, avocados and olives.</p>	
Eat for Health Australian Dietary Guidelines Summary 2013	31	Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol. Tips to eat less saturated fat.	<p>Eat fish and legumes/beans more often.</p> <p>Cut down on dishes with cream, buttery or creamy sauces or fatty gravy, instead choose tomato-based dishes.</p> <p>Replace sour cream or coconut milk with light evaporated milk or plain yoghurt.</p> <p>Use reduced fat yoghurt, vinegar, lemon juice, herbs and small amounts of unsaturated oils for dressings.</p> <p>Don't deep fry foods. Instead, sauté, stir-fry, grill, bake, steam, boil, microwave, poach or barbeque. Use small amounts of unsaturated oils if needed.</p> <p>Choose bread-based takeaways (sandwiches, rolls and wraps) rather than commercially baked or fried foods like pies, sausage rolls, chips, fried chicken and battered and fried seafood.</p> <p>Order a side salad or vegetables, instead of hot chips.</p> <p>Choose vegetable toppings on pizza, rather than extra cheese, ham or salami.</p>	Heading focuses on consumption of less saturated fat, so emphasises a nutrient-based approach, but also provides practical advice focused on food and food preparation.

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			Choose packaged foods which state they are reduced in fat or low in fat. But beware that these may contain more added sugars than regular varieties of these foods! Use small amounts of unsaturated spreads and oils instead of butter. Choose reduced or low-fat milk, yoghurt and cheese.	
Eat for Health Australian Dietary Guidelines Summary 2013	34	Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol. What is a serve of discretionary choices?	A serve of Discretionary choices provides about 500-600 kilojoule: 2 scoops (75g) ice-cream ; 2 slices (50-60g) processed meats, salami or mettwurst ; 1½ thick or 2 thin (50-70g) regular sausages ; ½ snack-size packet (30g) salty crackers or crisps; 2-3 (35g) sweet plain biscuits ; 1 (40g) doughnut ; 1 slice (40g) plain cake/small cake-type muffin ; 5-6 (40g) sugar confectionary/small lollies; 1 tbsp. (60g) jam or honey; ½ bar (25g) chocolate ; 2 tbsp. (40g) cream ; 1 tbsp. (20g) butter ; 1 can (375ml) soft drink (sugar-sweetened) ; ¼ pie or pastie (60g), commercial meat pie or pastie (individual size) ; 12 (60g) fried hot chips ; 200ml wine (2 std. drinks; but note this is often 1 glass for many Australian wines), 60ml spirits (2 std. drinks), 600ml light beer (1½ std. drinks), 400ml standard beer (1½ std. drinks)	Provides useful information about serves of discretionary foods, bringing together the ADGs and the modelling document in summary format.
Eat for Health Australian Dietary Guidelines Summary 2013	41-44	Pulling things together	Sample daily food patterns for adults, children & adolescents, toddlers and infants – provides average daily number of services from each of the five food groups, in addition to an allowance for unsaturated spreads/oils and nuts/seeds. Also includes additional serves for large or more active individuals – these can be additional serves from the five food groups or unsaturated spreads/oils or discretionary choices.	Provides tables and dietary pattern focus reinforcing a food-based, rather than nutrient-based, approach.
Eat for Health Infant Brochure: Giving your baby the best start: The best foods for infants	NA	Healthy habits: Breastfeed and choose nutritious foods for your baby	Start with solid foods around 6 months – first try an iron-fortified cereal and/or an iron rich food such as pureed meat, tofu or legumes. At the start your baby may only eat small amounts and breast milk or formula will be the main food. Then add different types of pureed vegetables, fruit and other foods from the Five Food Groups. Offer a variety of foods from the Five Food Groups and gradually vary the texture, from pureed to soft, to mashed, to minced, as your baby gets older.	Reinforces the need to offer infants a variety of the five food group foods, starting with iron rich food, of appropriate texture. No mention of fats or oils

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Eat for Health Infant Brochure: Giving your baby the best start: The best foods for infants	NA	Foods unsuitable for infants: Infants enjoy simple tastes, so avoid foods with added fat, salt or sugars	Cook baby foods yourself from fresh ingredients whenever you can, but don't add sugars or salt. Using frozen or canned foods is okay too, as long as they don't have added sugars or salt. Commercial baby foods are fine from time to time but babies need to try a wide range of tastes and textures. Children can drink full cream milk after 12 months and reduced-fat milk after 2 years.	Mentions foods with added fat in the heading (rather than saturated fat) but doesn't cover these in the content. Guidance re foods intrinsically high in saturated fat, rather than added fat, is not clear. Doesn't mention restriction on use of reduced-fat milk only applies as a complete milk drink.
Eat for Health Children Brochure: Healthy eating for children	NA	What are the dietary guidelines? Guideline 1:	To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs. Children and adolescents should eat sufficient nutritious foods to grow and develop normally. They should be physically active every day and their growth should be checked regularly.	Eat suitable amounts of nutritious foods – unlike ADGs does not mention the need to avoid foods and drinks high energy density, or anything about foods high in fat or in saturated fat.
Eat for Health Children Brochure: Healthy eating for children	NA	What are the dietary guidelines? Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day:	<ul style="list-style-type: none"> • Plenty of vegetables and legumes/beans • Fruit • Grain (cereal) foods • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years) • Plenty of water 	As per comments on Guideline 2 in the ADGs.
Eat for Health Children Brochure: Healthy eating for children	NA	What are the dietary guidelines? Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.	<ul style="list-style-type: none"> • Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. 	As per comments on Guideline 3 in the ADGs.
Eat for Health Children Brochure: Healthy eating for children	NA	Foods to limit: Discretionary choices	'Discretionary choices' are called that because they are not an essential or necessary part of our dietary patterns. Discretionary foods are high in kilojoules, saturated fat , added sugars, added salt, or alcohol. If chosen, they should be eaten only sometimes and in small amounts.	As per comments on Discretionary foods above in the ADGs summary (but not the ADGs) Includes energy, which is not always mentioned. Provides practical food examples.

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			Examples of discretionary choices include: sweet biscuits, cakes and desserts, processed meats and sausages, ice-cream, confectionery and chocolate, meat pies and other pastries, commercial burgers, hot chips, and fried foods, crisps and other fatty and/or salty snacks, cream and butter, sugar-sweetened cordials, soft drinks and sports drinks, alcoholic drinks.	
Eat for Health Children Brochure: Healthy eating for children	NA	Encourage healthy habits	You can help by teaching your whole family to: <ul style="list-style-type: none"> • Choosing 'everyday foods' for home and school from the five food groups. • Save discretionary choices for special occasions. • Provide a variety of types and colours of fresh vegetables & fruit. • Enjoy reduced fat varieties of milk, yogurt and cheese (2 years +) • Eat mainly wholegrain cereal foods and breads. 	Uses some terms to target for consumer messaging that do not appear in the ADGs e.g. 'everyday foods' of the five food groups
Eat for Health Adult Brochure: Healthy eating for adults. Eat for health and wellbeing	NA	What are the dietary guidelines? Guideline 1:	To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs. Older people should eat nutritious foods and keep physically active to help maintain muscle strength and healthy weight.	Reinforces need to eat suitable amounts of nutritious foods. Unlike the ADGs and ADGs summary does not include avoiding foods and drinks high in energy density or mention fat and/or saturated fat.
Eat for Health Adult Brochure: Healthy eating for adults. Eat for health and wellbeing	NA	What are the dietary guidelines? Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day:	<ul style="list-style-type: none"> • Plenty of vegetables and legumes/beans • Fruit • Grain (cereal) foods • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat • Plenty of water 	Comments as per Guideline 2 in ADGs
Eat for Health Adult Brochure: Healthy eating for adults. Eat for health and wellbeing		What are the dietary guidelines? Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.	<ul style="list-style-type: none"> • Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. 	Comments as per Guideline 3 in ADGs

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Eat for Health Adult Brochure: Healthy eating for adults. Eat for health and wellbeing	NA	Foods to limit: Discretionary choices	<p>'Discretionary choices' are called that because they are not an essential or necessary part of our dietary patterns. Discretionary foods are high in kilojoules, saturated fat, added sugars, added salt, or alcohol. If chosen, they should be eaten only sometimes and in small amounts.</p> <p>Examples of discretionary choices include: sweet biscuits, cakes and desserts, processed meats and sausages, ice-cream, confectionery and chocolate, meat pies and other pastries, commercial burgers, hot chips, and fried foods, crisps and other fatty and/or salty snacks, cream and butter, sugar-sweetened cordials, soft drinks and sports drinks, alcoholic drinks.</p>	Comments as per Discretionary foods above in the ADGs summary (but not the ADGs)
Eat for Health Adult Brochure: Healthy eating for adults. Eat for health and wellbeing	NA	Tips for choosing nutritious foods and drinks.	<p>Eat for health and wellbeing is about choosing foods from the five food groups every day, while limiting foods that are not essential to our health.</p> <ul style="list-style-type: none"> • Plan ahead and stock up on basic nutritious foods like wholegrain cereals and other grain foods, reduced fat milk, lentils or other legumes, eggs, and frozen or canned foods without added sugars or added salt – this way you can eat at home more often and cook meals yourself by adding fresh ingredients. • Choose a variety of types and colours of fresh vegetables & fruit. • Try new ways of cooking with vegetables like roasting, baking, barbequing and stir-frying. Add extra vegetables and legumes to your recipes. • Use fruits for snacks and desserts. • Lean red meats are important, but a maximum of 455 g a week is recommended. • Include at least 1 or 2 meat-free meals each week – include eggs, legumes such as beans and tofu, and nuts and seeds. • Choose reduced-fat varieties of milk, yogurt and cheese • Include small amounts of foods rich in unsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Choose carefully when eating out – limit creamy, commercially baked or fried foods. 	Provides practical food-based messages with examples; very clear.
Eat for Health Pregnancy Brochure:	NA	What are the dietary guidelines? Guideline 1:	To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs.	Reinforces need to eat suitable amounts of nutritious foods during pregnancy. Takes a

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Healthy eating during your pregnancy. Advice on eating for you and your baby. NHMRC				positive focus, e.g. doesn't mention energy density, high fat/saturated fat foods
Eat for Health Pregnancy Brochure: Healthy eating during your pregnancy. Advice on eating for you and your baby. NHMRC	NA	What are the dietary guidelines? Guideline 2: Enjoy a wide variety of nutritious foods from these five food groups every day:	<ul style="list-style-type: none"> • Plenty of vegetables and legumes/beans • Fruit • Grain (cereal) foods • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat • Plenty of water 	Comments as per Guideline 2 in ADGs
Eat for Health Pregnancy Brochure: Healthy eating during your pregnancy. Advice on eating for you and your baby. NHMRC	NA	What are the dietary guidelines? Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.	<ul style="list-style-type: none"> • Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks. • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. 	Comments as per Guideline 3 in ADGs
Eat for Health Pregnancy Brochure: Healthy eating during your pregnancy. Advice on eating	NA	Helpful habits: Eating well during pregnancy helps your baby develop and has health benefits for you too!	<p>Both you and your growing baby need extra nutrients. Steady weight gain during pregnancy is normal and important for the health of the mother and baby., it is also important not to gain too much weight. So choose foods from the Five Food Groups and limit discretionary foods and drinks high in saturated fat, added sugars and added salt such as cakes, biscuits and potato chips.</p> <p>You can eat well by:</p> <ul style="list-style-type: none"> • Enjoying a variety of fruits and vegetables. 	Provides mixture of food-based and nutrient-based messages with a focus on specific nutrients important during pregnancy, and provides examples of foods to limit.

Source	Page	Document or webpage title	Message/s	Comments
for you and your baby. NHMRC			<ul style="list-style-type: none"> Increasing your grain consumption to 8–8½ serves a day – mostly wholegrain – in preference to discretionary choices. Choosing foods high in iron, such as lean red meat or tofu, which are important for pregnant women. Making a habit of drinking milk, eating hard cheese and yoghurt, or calcium enriched alternatives. Reduced fat varieties are best. Enjoying a wide variety of vegetables, legumes, fruit and wholegrains and drinking plenty of water every day can assist with constipation, a common occurrence during pregnancy. 	
Australian Guide to Healthy Eating Poster	NA	Enjoy a wide variety of nutritious foods from these five food groups every day. Drink plenty of water.	<ul style="list-style-type: none"> Vegetables and legumes/beans Fruit Grain (cereal) foods, mostly wholegrain/high cereal fibre varieties Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat Plenty of water 	Reinforces need to eat a variety of fresh foods. Picture of chicken has fat removed, but not the meat.
Australian Guide to Healthy Eating Poster	NA	Only sometimes and in small amounts	Pictures of discretionary foods high in saturated fat, sugar and salt and alcohol.	Provides pictorial food-based examples
Australian Guide to Healthy Eating Poster	NA	Use small amounts	Pictures of containers of oils, canola spray and a margarine tub.	Provides pictorial food-based examples, but the type of fats and oils could be clearer for the margarine; could also include pictures of nuts and seeds from which the oils and spreads are derived.
Aboriginal and Torres Strait Islander Guide to Healthy Eating Poster	NA	Eat different types of foods from the five food groups every day.	<ul style="list-style-type: none"> Vegetables and legumes/beans Fruit Grain (cereal) foods, mostly wholegrain/high cereal fibre varieties Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat Plenty of water 	Includes images of meat and chicken without visible fat/skin removed.
Aboriginal and Torres Strait Islander Guide to	NA	Only sometimes and in small amounts	Pictures of discretionary foods high in saturated fat, sugar and salt and alcohol.	As per comments on Discretionary Foods in the AGTHE

Source	Page	Document or webpage title	Message/s	Comments
Healthy Eating Poster				
Aboriginal and Torres Strait Islander Guide to Healthy Eating Poster	NA	Use small amounts	Pictures of containers of vegetable oil, olive oil, canola spray and a margarine tub.	As per comments on unsaturated fats and oils allowance in the AGTHE
Australian Dietary Guidelines Poster	NA	Eat for Health	1 To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs 2 Enjoy a wide variety of nutritious foods from the five food groups every day and drink plenty of water (AGHE picture included) 3 Limit intake of foods containing saturated fat, added salt, added sugars and alcohol 4 Encourage, support and promote breastfeeding 5 Care for your food; prepare and store it safely	Reinforces key messaging of the ADGs recommendations
Aboriginal and Torres Strait Islander Dietary Guidelines Poster	NA	Eat for Health	1 To achieve and maintain a healthy weight, be physically active and choose amounts of nutritious food and drinks to meet your energy needs 2 Enjoy a wide variety of nutritious foods from the five food groups every day and drink plenty of water (A&TSI AGHE picture included) 3 Limit intake of foods containing saturated fat, added salt, added sugars and alcohol 4 Encourage, support and promote breastfeeding 5 Care for your food; prepare and store it safely	Reinforces key messaging of the ADGs recommendations
Eat for Health Website		About the Australian Dietary Guidelines: How do I make healthy food choices?	Many of the health problems due to poor diet in Australia stem from excessive intake of foods that are high in energy, saturated fat, added sugars and/or added salt but relatively low in nutrients. These include fried and fatty take-away foods, baked products like pastries, cakes and biscuits, savoury snacks like chips, and sugar-sweetened drinks. Evidence suggests Australians need to eat more: <ul style="list-style-type: none"> • vegetables and legumes/beans • fruits 	Contextualises the key messaging of the ADGs recommendations, including justification and practical examples; adopts an "eat less"/"eat more" approach, rather than 'limit'.

Source	Page	Document or webpage title	Message/s	Comments
			<ul style="list-style-type: none"> • wholegrain cereals • reduced fat milk, yoghurt, cheese • fish, seafood, poultry, eggs, legumes/beans (including soy), and nuts and seeds. • red meat (young females only) <p>Evidence suggests Australians need to eat less:</p> <ul style="list-style-type: none"> • starchy vegetables • refined cereals • high and medium fat dairy foods • red meats (adult males only) • food and drinks high in saturated fat, added sugar, added salt, or alcohol (e.g. fried foods, most take-away foods from quick service restaurants, cakes and biscuits, chocolate and confectionery, sweetened drinks). 	
		About the Australian Dietary Guidelines: How have the Australian Dietary Guidelines changed since the last edition?	<p>To make the information easier to understand and use, the revised Guidelines are based on foods and food groups, rather than nutrients as in the 2003 edition.</p> <p>The evidence base has strengthened for:</p> <p>The association between the consumption of milk and decreased risk of heart disease and some cancers</p>	Doesn't really spell out that the evidence base has strengthened for the association between the consumption of milk and decreased risk of heart disease and some cancers, irrespective of the fat content of the milk.
Eat for Health Website		Australian Dietary Guidelines 1 - 5	<p>Guideline 2: Enjoy a wide variety of nutritious foods from these five groups every day:</p> <ul style="list-style-type: none"> • Plenty of vegetables and legumes/beans • Fruit • Grain (cereal) foods, mostly wholegrain and/or high cereal fibre • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat (reduced fat milks are not suitable for children under the age of 2 years) <p>And drink plenty of water</p> <p>Guideline 3: Limit intake of foods containing saturated fat, added salt, added sugars and alcohol</p> <p>a. Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.</p>	Comments as per Guidelines 2 and 3 in the ADGs.

Source	Page	Document or webpage title	Message/s	Comments
			<ul style="list-style-type: none"> • Replace high fat foods which contain predominantly saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominantly polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado. • Low fat diets are not suitable for children under the age of 2 years. 	
Eat for Health Website		Australian Guide to Healthy Eating	<p>Enjoy a wide variety of nutritious foods from these five food groups every day:</p> <ul style="list-style-type: none"> • Vegetables and legumes/beans • Fruit • Grain (cereal) foods, mostly wholegrain/high cereal fibre varieties • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or alternatives, mostly reduced fat <p>Drink plenty of water.</p> <p>Only sometimes and in small amounts</p> <p>Pictures of discretionary foods high in saturated fat, sugar and salt and alcohol.</p> <p>Use small amounts</p> <p>Pictures of containers of oils, canola spray and a margarine tub.</p>	Comments as per ADGs documents. , includes no mention of unsaturated spreads and oils, or in this allowance, the nuts and seeds from which they are derived
Eat for Health Website		Food Essentials	Within each group, healthy choices are those that are lowest in saturated fats , added sugars and added salt.	The definition of healthy choices is not necessarily consistent with the Evidence report or key messages of the ADGs. Takes a strong negative nutrient-based approach
Eat for Health Website		The Five Food Groups	<p>More information on the Five Food Groups:</p> <ul style="list-style-type: none"> • Vegetables and legumes/beans • Fruit • Grain (cereal) foods, mostly wholegrain/high cereal fibre varieties • Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or alternatives, mostly reduced fat 	Comments as per Guideline 2 ADGs
Eat for Health Website		Vegetables and Legumes/Beans	How much should I eat from the vegetable and legumes / beans group?	Provides practical food based examples, however no mention of frying or type of fat

Source	Page	Document or webpage title	Message/s	Comments
		Home>Food Essentials>The Five Food Groups>Vegetables and Legumes/Beans	<p>If potatoes are eaten as hot chips and crisps, they are considered to be a discretionary food rather than a serve of vegetables. Hot chips and crisps are high in kilojoules and added fat and added salt.</p> <p>What can I do with vegetables and legumes / beans? Eat them raw, grate them, slice them, stir fry, steam or boil them and bake them. Mix them together and add herbs, spices and other low salt flavourings... the options are endless. Vegetables can be used fresh, frozen, canned or dried varieties. However, if using canned varieties, avoid those with added salt.</p>	
Eat for Health Website		<p>Grain (cereal) foods, mostly wholegrain and /or high cereal fibre varieties Home>Food Essentials>The Five Food Groups> Grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties</p>	<p>What exactly is a refined grain cereal? Refined grains, such as white flour are nearly always used in processed foods, such as cakes and biscuits. These types of grain foods are not recommended as they are considered a discretionary food choice because of their relatively large amounts of added fats and added sugars and/or added salt.</p> <p>Health benefits of grain foods Whole grains are also naturally low in saturated fat and contain beneficial polyunsaturated fatty acids.</p>	<p>Provides practical food based examples, however no mention of type of fat in Discretionary foods, and uses the word "added" which is inconsistent with other messaging in the ADGs</p> <p>Adopts a more nutrient-based focus on fats towards the end- which is unusual in messaging around grain foods.</p>
Eat for Health Website		<p>Lean Meat and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans Home>Food Essentials>The Five Food Groups> Lean Meat and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans</p>	<p>Traditionally, the foods from this food group are considered 'protein rich' and most Australians have no trouble eating enough protein each day. More importantly however, this food group also provides a wide variety of other nutrients such as: iodine, iron, zinc, vitamins, especially B12, and essential fatty acids.</p> <p>What's in the lean meat and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans group? Foods from this group fall into 6 categories. Examples: 1. Lean meats - Beef, lamb, veal, pork, kangaroo, lean (lower salt) sausages 2. Poultry - Chicken, turkey, duck, emu, goose, bush birds 3. Fish and seafood - Fish, prawns, crab, lobster, mussels, oysters, scallops, clams 4. Eggs - Chicken eggs, duck eggs</p>	<p>Adopts a nutrient-based rationale for the meat and alternatives group, with a focus on protein, which is not featured elsewhere. Some definitions are missing, e.g. doesn't explain 'essential fatty acids', or define 'lean' (e.g. visible fat removed from meat)</p> <p>Provides an image with fat on meat and chicken with skin- not clear if these are included in serve sizes.</p> <p>The significance of oily fish is not explained</p>

Source	Page	Document or webpage title	Message/s	Comments
			<p>5. Nuts and seeds - Almonds, pine nuts, walnut, macadamia, hazelnut, cashew, peanut, nut spreads, pumpkin seeds, sesame seeds, sunflower seeds, brazil nuts</p> <p>6. Legumes/beans - All beans, lentils, chickpeas, split peas, tofu.</p> <p>How much should I eat from the lean meat and poultry, fish, eggs, tofu, nuts and seeds and legumes/beans group?</p> <p>To ensure adequate iron and zinc, about half the serves from this food group should be lean meat (for example beef, veal, lamb, pork, kangaroo). Beware that smoked, salted and preserved foods from this food group, such as ham, bacon and salami, are usually higher in saturated fat, salt, and contain chemical properties that may be responsible for increased health risks. Because of this, most of these food choices are placed in the discretionary food group, and consumption of these foods should be limited.</p> <p>What can I do with these foods?</p> <p>For ideas on how to prepare some tasty high protein meat or vegetarian meals take a look at these recipes (link)</p> <p>Health benefits of the lean meat and poultry, fish, eggs, tofu, nuts and seeds, and legume / beans group</p> <p>There are also many benefits in eating fish. Consumption of fish more than once a week is associated with a reduced risk of developing dementia in older adults. Consuming fish at least twice a week has even further benefits with reduced risk of cardiovascular disease, stroke, and age-related macular degeneration in the eyes. Aim for about 2 serves of fish a week, preferable oily fish.</p>	
Eat for Health Website		<p>Milk, yoghurt, cheese and/or their alternatives (mostly reduced fat)</p> <p>Home>Food Essentials>The Five Food Groups> Milk, yoghurt, cheese and/or their alternatives (mostly reduced fat)</p>	<p>Low or reduced fat milk, yoghurt and cheese choices are recommended for most people two years and over. Most Australians consume only about half the recommended quantity of milk products or alternatives, but eat too many full fat varieties, which can increase the kilojoules and the saturated fat content of the diet. Reduced fat varieties of milks are not suitable as a milk drink for children under the age of two due to their high energy needs required for growth. For nearly everyone else (over the age of two) this is the best choice.</p> <p>What's in the milk, yoghurt, cheese and / or alternative group?</p>	<p>Recommends reduced fat milk products-justified by a focus on energy density and saturated fat as a nutrient, which is not consistent with the Evidence report.</p>

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			<p>A wide range of milk and yoghurt products are available with varying levels of fat. Milk can be fresh, dried, evaporated, or UHT (long life). Cheese is usually high in kilojoules, saturated fat and salt and is best limited to 2-3 times a week. However, some cheeses also have reduced levels of fat and salt. Examples of milk, yoghurt, cheese and/or alternatives include:</p> <ul style="list-style-type: none"> • Milks - All reduced fat or full cream milks, plain and flavoured, long life milks, powdered milk, evaporated milk, soy beverages (fortified with at least 100mg calcium/100mL) • Yoghurt - All yoghurts including reduced fat or full cream, plain and flavoured, soy yoghurt (calcium fortified) • Cheese - All hard cheeses, reduced or full fat for example cheddar, red Leicester, Gloucester, Edam, Gouda Soy cheeses (calcium fortified). <p>How much should I eat from the milk, yoghurt, cheese and / or alternatives group?</p> <p>What can I do with these foods?</p> <p>Desserts – Ice cream and dessert style custards are relatively high in kilojoules, fat and added sugars and are considered a discretionary choice that should be eaten only occasionally. However, lower fat, lower sugar milk based desserts including custards, junkets and puddings, can be made at home. Low sugar, low fat yoghurt (with or without fruit) is a great quick and easy dessert that is low in kilojoules.</p> <p>Health benefits of milk, yoghurt, cheese and / or alternatives</p>	<p>Does not mention alternatives to dairy foods such as other milks like soy which may be calcium fortified.</p> <p>Provides serve sizes but not all labels for reduced fat varieties (e.g. skim) to help consumer selection.</p> <p>Desserts high in fat are described as discretionary choices- however this should be high in saturated fat. Need to be consistent on language regarding labelling fat – lower fat, low fat or reduced fat. Messaging around milk may be confusing for some consumers</p>
Eat for Health Website		<p>How much do we need each day?</p> <p>Home>Food Essentials>How much do we need each day?</p>	<p>Most people who want to lose weight should stick to the minimum number of serves. However, people in their healthy weight range, who are taller than average or more physically active, may find they need extra serves from the five food groups. Ideally, most of the extra serves should be chosen from the vegetables, fruit and grain (cereals) food groups but some extra choices can be made from milk, yoghurt, cheese and/or alternatives, the lean meat and poultry, fish, eggs and/or alternative group, and including less often, unsaturated fats/oils/spreads. Discretionary choices are often</p>	<p>Provides a hierarchy of foods to choose for extra serves beyond Foundation diets, which vary a little from other guidance. E.g. includes some 5 food groups (but doesn't mention 'reduced fat' in the context of milk, cheese, yoghurt, and includes the qualifier 'less often' re unsaturated fats/oils/spreads. Notes to include fish every week, but elsewhere this is recommended as twice per week.</p>

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			<p>an enjoyable part of the Australian diet, and can be included occasionally if your energy needs allow this.</p> <p>Often people find that to get enough serves from all the food groups they need to: include lean meat or meat alternative as part of at least one meal a day; include a serve of low fat milk, yoghurt or cheese as a significant part of at least two meals or snacks</p> <p>It's also good for your health to include: fish meals every week.</p>	
Eat for Health Website		What is a serve? Home>Food Essentials>How much do we need each day>What is a serve?	<p>Take a look at the Five Food Groups and see how big a serve is for each of the Five Food Groups:</p> <ul style="list-style-type: none"> • vegetables • fruit • grain (cereal) foods, mostly wholegrain and/or high cereal fibre varieties • lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans • milk, yoghurt cheese and/or alternatives, mostly reduced fat <p>How much unsaturated spreads and oils can I include in my diet?</p> <p>A 'serve' of foods that provide unsaturated fat such as unsaturated margarine or oil, nuts and seeds is 10g (such as two teaspoons of margarine or oil). However, these foods are high in kilojoules so remember to always keep quantities small, especially if aiming to lose weight. Spread unsaturated margarine, nut pastes and avocado thinly. Use just 1 teaspoon (measured not poured) per person in cooking and think of avocado, seeds and nuts as sprinkles, garnishes or a snack in small quantities.</p> <p>Meal Planning</p> <p>Sample meal plan for women Sample meal plan for men Sample meal plan for children</p>	<p>Notes that a serve of unsaturated fat and nuts/seeds is 10g. Provides practical serve suggestions for margarine/oil but not for other equivalents. Provides ideas about how to limit intake of unsaturated fats/oils, whereas usually the focus is on limiting sources of saturated fat. Sample meals do not mention lean meat or poultry, nor removing fat or skin from meat/poultry.</p>
Eat for Health Website		Serve sizes Home>Food Essentials>How much do we need each day>Serve sizes	<p>What is a serve of vegetables*?</p> <p>*With canned varieties, choose those with no added salt</p> <p>How much is a serve of lean meat and poultry, fish, eggs, nuts and seeds, and legumes/beans?</p> <p>A standard serve is (500–600kJ):</p>	<p>Comments as per serve sizes in the AGTHE and ADGs Educator's Guide</p> <p>Provides additional rationale to limit intake of discretionary foods in favour of 5 food group foods. However, messaging around intake of</p>

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			<ul style="list-style-type: none"> • 65g cooked lean red meats such as beef, lamb, veal, pork, goat or kangaroo (about 90-100g raw) • 80g cooked lean poultry such as chicken or turkey (100g raw) • 100g cooked fish fillet (115g raw) or one small can of fish • 2 large (120g) eggs • 1 cup (150g) cooked or canned legumes/beans such as lentils, chick peas or split peas (preferably no added salt) • 170g tofu • 30g nuts, seeds, peanut or almond butter or tahini or other nut or seed paste (no added salt) <p>How much is a serve of milk*, yoghurt*, cheese* and/or alternatives?</p> <p>A standard serve is (500–600kJ):</p> <p>1 cup (250ml) fresh, UHT long life, reconstituted powdered milk or buttermilk</p> <p>½ cup (120ml) evaporated milk</p> <p>2 slices (40g) or 4 x 3 x 2cm cube (40g) of hard cheese, such as cheddar</p> <p>½ cup (120g) ricotta cheese</p> <p>¾ cup (200g) yoghurt</p> <p>1 cup (250ml) soy, rice or other cereal drink with at least 100mg of added calcium per 100ml</p> <p>*Choose mostly reduced fat</p> <p>If you do not eat any foods from this group, try the following foods, which contain about the same amount of calcium as a serve of milk, yoghurt, cheese or alternatives (note: the kilojoule content of some of these serves (especially nuts) is higher so watch this if trying to lose weight).</p> <ul style="list-style-type: none"> • 100g almonds with skin • 60g sardines, canned in water • ½ cup (100g) canned pink salmon with bones • 100g firm tofu (check the label as calcium levels vary) <p>How many kilojoules are in a serve of each food group?</p> <p>Not all food groups provide the same number of kilojoules (kJ) per serve. A serve of the grain (cereals) food group; milks/yoghurt/cheese and /or alternatives group; lean meats,</p>	unsaturated fats/oils or nuts/seeds from which they are derived is less clear.

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			<p>poultry, fish, eggs and/or alternatives group; will provide about 500-600kJ.</p> <p>Also, while discretionary food serves can have similar kilojoules (about 600kJ) to a serve of the five food groups, they are usually much smaller and less filling, don't provide you with the fibre and nutrients you need and contain too much saturated fat, added sugars and added salt for good health.</p>	
Eat for Health Website		Recommended number of serves for children, adolescents and toddlers Home>Food Essentials>How much do we need each day> Recommended number of serves for children, adolescents and toddlers	<p>Recommended average daily number of serves from each of the five food groups*</p> <ul style="list-style-type: none"> • Vegetables & legumes/beans • Fruit • Grain (cereal) foods, mostly wholegrain • Lean meat and poultry, fish, eggs, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or alternatives (mostly reduced fat) <p>Additional serves for more active, taller or older children and adolescents - Approx. number of additional serves from the five food groups or discretionary choices.</p> <p>*Includes an allowance for unsaturated spreads or oils, nuts or seeds (½ serve [4.5g] per day for children 2-3 years of age, 1 serve [7-10g] per day for children 3-12 years of age; 1 ½ serves [11-15g] per day for children 12-13 years, and 2 serves [14-20g] per day for adolescents 14-18 years of age and for pregnant and breastfeeding girls).</p> <p>**For toddlers an allowance for unsaturated spreads or oils or nut/seed paste of 1 serve (7-10g) per day is included. Whole nuts and seeds are not recommended for children of this age because of the potential choking risk.</p>	<p>Comments as per number of serves in the AGTHE and ADGs Educator's Guide</p> <p>No mention of reduced fat not being suitable as a complete milk feed for children under 2 years.</p> <p>No mention of unsaturated fats as potential additional serves for more active, taller or older children. Unsaturated spreads, oils and nuts/seeds allowance provided but not in practical sense (e.g. teaspoons)</p>
Eat for Health Website		Recommended number of serves for adults Home>Food Essentials>How much do we need each day> Recommended number of serves for adults	<p>Recommended average daily number of serves from each of the five food groups*</p> <ul style="list-style-type: none"> • Vegetables & legumes/beans • Fruit • Grain (cereal) foods, mostly wholegrain • Lean meat and poultry, fish, eggs, nuts and seeds, and legumes/beans • Milk, yoghurt, cheese and/or alternatives (mostly reduced fat) 	<p>Comments as per number of serves in the AGTHE and ADGs Educator's Guide</p> <p>No mention of unsaturated fats as additional serves for more active or taller adults.</p>

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			<p>Additional serves for more taller or active men and women - Approx. number of additional serves from the five food groups or discretionary choices.</p> <p>* Includes an allowance for unsaturated spreads or oils, nuts or seeds (4 serves [28-40g] per day for men less than 70 years of age; 2 serves [14-20g] per day for women and older men.)</p>	
Eat for Health Website		Fat, salt, sugars and alcohol Home>Food Essentials> Fat, salt, sugars and alcohol	<p>Guideline 3 recommends we limit intake of foods containing saturated fat, added salt, added sugars and alcohol</p> <p>Why do we need to eat less of these?</p> <p>Many of the health problems in Australia today are linked to poor eating habits. Too many people eat too much saturated fat, added salt, added sugars and alcohol. Even reducing these by small amounts can make us healthier. It can help us manage our weight better and reduce our risk of chronic diseases like heart disease, stroke, Type 2 diabetes, some cancers and chronic kidney disease. This is why foods that are high in saturated fats, added salt, added sugars or alcohol are called discretionary choices. They also tend to be low in fibre and important nutrients like vitamins and minerals. These foods are important for celebrating and social occasions, but should be limited to small amounts and only eaten sometimes.</p>	Comments as per guideline 3 in the ADGs Emphasises that foods high in saturated fat are classified as discretionary choices and should be limited to small amount and eaten sometimes.
Eat for Health Website		Fat Home>Food Essentials> Fat, salt, sugars and alcohol> Fat	<p>Fats are an essential part of our diet and is important for good health. There are different types of fats, with some fats being healthier than others. To help make sure you stay healthy, it is important to eat unsaturated fats in small amounts as part of a balanced diet.</p> <p>When eaten in large amounts, all fats, including healthy fats, can contribute to weight gain. Fat is higher in energy (kilojoules) than any other nutrient and so eating less fat overall is likely to help with weight loss.</p> <p>Eating less saturated and trans fats may help lower your risk of heart disease. When buying products check the labels and choose the varieties that are lower in saturated and trans fats and higher in poly and monounsaturated fats.</p> <p>So a diet that is low in saturated fats and trans fats, but that also includes moderate amounts of unsaturated fats will help you stay healthy.</p>	<p>This section provides more detailed information on fats and oils than in several other documents in the ADGs suite.</p> <p>The advice provided is presented in a different order than other messaging, and could be confusing for some consumers. It could be better to start with recommendations to consume less foods high in saturated fat, before advising to eat saturated fats in small amounts, and to adopt a less nutrient-based approach, with a stronger focus on foods. With some restructuring, the advice in this section would be clearer</p>

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			<p>Saturated fats Eating greater amounts of saturated fat is linked with an increased risk of heart disease and high blood cholesterol levels. These fats are usually solid at room temperature and are found in:</p> <p>Animal-based products:</p> <ul style="list-style-type: none"> • Dairy foods – such as butter, cream, full fat milk and cheese • Meat – such as fatty cuts of beef, pork and lamb and chicken (especially chicken skin), processed meats like salami. Some plant-derived products: • Palm oil • Coconut • Coconut milk and cream • Cooking margarine <p>Many manufactured and packaged foods:</p> <ul style="list-style-type: none"> • Fatty snack foods (such as potato chips, savoury crackers) • Deep fried and high fat take away foods (such as hot chips, pizza, hamburgers) • Cakes and high fat muffins • Pastries and pies (including quiche, tarts, sausage rolls, pasties, croissants) • Sweet and savoury biscuits <p>Unsaturated fats Unsaturated fats are an important part of a healthy diet. These fats help reduce the risk of heart disease and lower cholesterol levels (among other health benefits) when they replace saturated fats in the diet.</p> <p>There are two main types of unsaturated fats:</p> <p>Polyunsaturated fats:</p> <ul style="list-style-type: none"> • omega-3 fats which are found in fish, especially oily fish • omega-6 fats which are found in some oils such as safflower and soybean oil, along with some nuts, including brazil nuts. <p>Monounsaturated fats:</p> <ul style="list-style-type: none"> • found in olive and canola oil, avocados and some nuts, such as cashews and almonds. <p>Trans fats Trans fats are unsaturated fats that have been processed and as a result, behave like saturated fats. Eating trans fats increases the</p>	

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			<p>levels of 'bad' cholesterol and decreases the levels of 'good' cholesterol in the body which is a major risk factor for heart disease. It is important to lower the amounts of trans fats you eat to help you stay healthy.</p> <p>Trans fats are found in many packaged foods and also in butter and some margarines. Use food labels to compare foods and choose those with fewer trans fats.</p> <p>It is great for health to replace saturated and trans fats with mono and polyunsaturated fats.</p> <p>Cholesterol</p> <p>Cholesterol is a type of fat found in food, but also in our blood. Cholesterol has many important functions in the body but having high levels of the wrong type of cholesterol in the blood increases heart disease risk.</p> <p>It was once thought that eating too many cholesterol-containing foods (such as eggs) was the major dietary cause of high blood cholesterol level. But we now know that eating too many foods containing higher amounts of saturated and trans fats is a bigger problem and has a much greater influence on blood cholesterol levels.</p>	
Eat for Health Website		<p>Discretionary food and drink choices</p> <p>Home>Food Essentials>Discretionary food and drink choices</p>	<p>What are discretionary food choices?</p> <p>Some foods and drinks do not fit into the Five Food Groups because they are not necessary for a healthy diet and are too high in saturated fat and/or added sugars, added salt or alcohol and low in fibre. These foods and drinks can also be too high in kilojoules (energy). Many tend to have low levels of essential nutrients so are often referred to as 'energy-dense' but 'nutrient-poor' foods. The problem is that they can take the place of other more nutritious foods. Also, the higher levels of kilojoules, saturated fat, added sugars, added salt and/or alcohol that they contain are associated with increased risk of obesity and chronic disease such as heart disease, stroke, type 2 diabetes, and some forms of cancer.</p> <p>It is easy to have too much and too many of these foods and drinks, and many people do. If you are trying to lose weight, you are unlikely to be able to fit these foods into your lower kilojoule</p>	<p>Comments as per those re discretionary choices in the ADGs.</p> <p>Description of discretionary foods uses a range of terms to describe high saturated fats e.g. fattier, high fat, fatty, high saturated fats. The table with the discretionary foods and drinks uses higher fat and not higher saturated fat. Discussion around discretionary choices with focus on both saturated fat and energy. The discussion on extra foods in total diets fails to discuss the potential use of extra unsaturated oils/spreads/nuts/seeds.</p>

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			<p>target. However, for people in their normal weight range, these foods and drinks in occasional, small amounts, can add variety and enjoyment to eating. These 'optional' foods and drinks are referred to as 'discretionary choices'.</p> <p>'Discretionary' foods and drinks include sweet biscuits, cakes, desserts and pastries; processed meats and fattier/salty sausages; sweetened condensed milk; ice cream and other ice confections; confectionary and chocolate; savoury pastries and pies; commercial burgers with a high fat and/or salt content; commercially fried foods; potato chips, crisps and other fatty and/or salty snack foods including some savoury biscuits; cream, butter and spreads which are high in saturated fats; sugar-sweetened soft drinks and cordials, sports and energy drinks and alcoholic drinks.</p> <p>What types of food are included in this category? Higher fat: bacon, ham, butter, cream, ghee, certain tacos, nachos, enchilada, crisps, dairy blends, frankfurts etc., meat pies, pastry, pizza, potato chips, quiche, salami/mettwurst, some processed meats, some sauces/dressings, spring roll. Higher fat and added sugars: biscuits, cake, chocolate/bars, dessert custards, doughnuts, ice cream, iced buns, muesli bars, puddings, slices, some confectionary, some sauces/ dressings, sweet muffins, sweet pastries, sweet pies and crumbles.</p> <p>What is a serve of Discretionary foods? One 'serve' of a discretionary food, is the amount that contains 600kJ. To find out how much of a particular discretionary food would be equal to one 'serve', you can use the nutrition information panel (to work out what amount of the product would contain 600kJ. E.g. listed</p> <p>How do discretionary foods fit into a healthy diet? Some people require extra serves for example, those who are taller and more active and these can sometimes include extra serves of discretionary foods. It is best if these extra serves come from the five food groups, particularly wholegrain cereals, vegetables</p>	

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			including legumes/beans and fruit. However they can also sometimes include serves of discretionary foods. If you are aiming to lose weight, you are more likely to be successful if you minimise discretionary foods, because they are high in kilojoules but low in essential nutrients.	
Eat for Health Website		Frequently Asked Questions Home>Food Essentials>Frequently Asked Questions	<p>Energy (Kilojoule) Balance The ADGs will help you reduce the kilojoules that you eat and drink. Kilojoules can be reduced by swapping discretionary foods for foods from the five food groups, reducing portion size and avoiding extra serves. Eating and drinking less fat, added sugars and alcohol and more fibre and water helps too. Fat, sugar and alcohol have more concentrated kilojoules while water has no kilojoules and fibre in food makes it less energy dense. Even small changes are worthwhile.</p> <p>What are processed foods? When people talk about processed foods they are often thinking of 'discretionary foods' which are usually made up of a number of ingredients, often have added fats, added sugars and/or added salt and may have fibre removed. The higher saturated fat, sugar and salt content and lower fibre of discretionary foods is linked with excess weight and some chronic disease. This means discretionary foods should be chosen with care and limited to occasional and small amounts particularly if you are aiming to lose weight.</p> <p>However, strictly speaking 'processed' foods are any foods that have undergone a process, even cooking. Often foods need some sort of processing to be edible or palatable. For example grains need to be ground, cooked or rolled, such as for making bread and pasta. Processing can also make some foods better for us, like low fat and skim milk, where saturated fat has been removed.</p> <p>So we don't need to avoid all processed foods, but rather to focus on those that still contain all the fibre, like whole grains, whole fruits and vegetables, and avoid those where the fibre has been removed such as white bread and fruit and vegetable juices. We also need to be aware of processed foods when saturated fat, sugars or salt</p>	As with some other sections of the ADGs about energy balance, this section focuses on total fat rather than saturated fat. Greater context could help clarify recommendations and improve consistency of messaging

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			has been added and use food label reading skills to make better choices.	
Eat for Health Website		Eating Well	It can be hard to choose nutritious foods and drinks, especially when foods and drinks high in saturated fat, added sugars, added salt and alcohol are readily available and affordable, and the environment in which we live promotes over-consumption. Aim for a healthy lifestyle – make positive choices and take control of your health. Look at all your areas of wellbeing and don't just focus on your weight.	Provides potentially useful context re discretionary foods and weight control
Eat for Health Website		Tips for eating well Home>Eating Well>Tips for eating well	Eating Regularly A planned pattern of eating is more likely to include the recommended number of serves from the five food groups. A spontaneous, unstructured eating pattern is more likely to include too many discretionary foods which means too much saturated fat, added sugars, added salt and kilojoules at the expense of fibre and important nutrients. Don't skip breakfast People who regularly eat a breakfast based on wholegrain cereal or bread, low fat milk or yogurt and maybe some fruit or vegetables are much more likely to be eating well and lose weight than those who skip breakfast.	This section provides practical advice re eating habits, around breakfast and planning meals. It uses the term low fat milk, where other sections use reduced fat milk, and focuses on nutrients rather than foods
Eat for Health Website		Eating away from home Home>Eating Well>Tips for eating well>Eating away from home	Choosing healthier meals , snacks and drinks can be more challenging when you're away from home. Sometimes the available choices are only those higher in saturated fat, added sugars, added salt and kilojoules. Takeaway food <ul style="list-style-type: none"> • Choose bread based options like wraps, kebabs, souvlaki, hamburgers. • Avoid deep fried and pastry options. • Include extra vegetables and salad. • Choose smaller portions or share with someone else and add a green salad to reduce the kilojoules of the meal. • Limit high fat, high salt sauces and toppings like cheese, fatty meats and mayonnaise (ask for less). • Drink plenty of water. 	This section provides practical advice re eating away from home. It focuses on low fat food and cooking methods, rather than limiting foods high in saturated fat

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			<ul style="list-style-type: none"> • Don't upsize unless it's with a side salad <p>With friends</p> <ul style="list-style-type: none"> • If you know you will be able to fill half your plate with salad, you can choose less of the other dishes are limit the kilojoules of the meal. <p>At restaurants</p> <ul style="list-style-type: none"> • Ask for dressings and sauces to come separately so you can add a smaller amount yourself and save on fat and kilojoules • Avoid large serves of pasta and rice dishes with few vegetables and high fat sauces. • Choose a lean piece of meat, skinless chicken or seafood • Avoid fried, battered and crumbed choices; instead choose steamed, pan fried, braised, poached, baked, roasted or grilled. 	
Eat for Health Website		Choosing nutritious foods Home>Eating Well>Tips for eating well>Eating away from home	<p>The Australian Dietary Guidelines, recommend that we choose widely from the Five Food Groups and limit discretionary foods that are higher in saturated fat, added salt and added sugars. Recent surveys of Australian eating patterns tell us that we are choosing discretionary foods and drinks too often and this means we are also getting too many kilojoules and missing out on getting enough nutritious foods from the Five Food Groups.</p> <p>How to limit foods and drinks high in saturated fat, added salt, added sugars and alcohol</p> <p>The Australian Dietary Guidelines recommend that we limit how much saturated fat, added salt, added sugars and alcohol we eat and drink.</p> <p>Swapping discretionary foods for foods from the Five Food Groups will reduce how much saturated fat, added salt and added sugars you eat and give you more fibre. It will also help you limit your kilojoules and lose weight.</p> <p>Reading labels to compare products is also a great way to limit saturated fat, added sugars, added salt and kilojoules. It can also be useful to plan ahead for eating out.</p> <p>Another strategy to limit discretionary foods and drinks and avoid extra kilojoules when you're trying to lose weight is to be selective, focus on smaller portion sizes and eat more 'mindfully'.</p>	This section provides practical advice re choosing nutritious foods, but tends to focus on nutrients rather than foods

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Eat for Health Website		Healthy Eating on a Budget Home>Eating Well>Tips for eating well> Healthy Eating on a Budget	Spend most of your money on the Five Food Groups. If you would really like to have a high kilojoule food , buy the smallest amount that will satisfy you, the best quality you can afford and eat it slowly, savouring it with all your senses. Try to limit discretionary foods and drinks to special occasions and small amounts. Avoiding discretionary foods not only saves you money but extra kilojoules too. Use powdered skim milk in recipes. Make your own custards and milk based desserts using low fat milk and limit added sugar. Buy smaller amounts of lean meat, skinless chicken and fish and extend meals by adding legumes, extra vegetables and grains. By adding extra vegetables to meat dishes, you will also reduce the kilojoules in the dish.	This section attempts to provide practical advice re healthy eating on a budget, but uses some unusual words and concepts for the ADGS, e.g. high kilojoule food, and buying the “best quality you can afford”. It could be updated with recent evidence around the affordability of healthy diets in Australia, and take a more food-based, dietary pattern approach
Eat for Health Website		Food shopping tips Home>Eating Well>Tips for eating well> Food shopping tips	Stock up on basics <ul style="list-style-type: none"> • Frozen vegetables and canned vegetables without added salt • Dried legumes and beans, lentils, baked beans and chickpeas canned without added salt • Frozen fruit, pie pack fruit or fruit canned in juice • Wholemeal bread, rolls, crumpets, English muffins and wraps to freeze • Wholegrain pastas, noodles, lasagne sheets, brown rice, barley, bulgur, couscous, polenta and quinoa • Lean cuts of meat, skinless chicken and fish for freezer • Fish canned without added salt • Eggs • Powdered skim milk, low fat or skim UHT milk, evaporated skim milk. Not only are these products lower in saturated fat, but also lower in kilojoules and good for weight control. 	This section provides practical advice re shopping, and is food-based until dairy foods are mentioned, than takes a nutrient (fat)-based approach, that dominates the final section
Eat for Health Website		How to add variety to your diet Home>Eating Well>Tips for eating well> Food shopping tips	Stock up on long life and canned products so you never run out <ul style="list-style-type: none"> • Buy fruit canned without added sugars (especially pie pack varieties) and vegetables canned without salt (no added salt varieties). 	No mention of buying canned vegetables in healthy oils (e.g. olive oil) or limiting those with added saturated fat, such as mushrooms in creamy sauce

Source	Page	Document or webpage title	Message/s	Comments
			<ul style="list-style-type: none"> Keep some long life fat reduced milk and skim milk powder in the cupboard 	
Eat for Health Website		Quick and easy meals Home>Eating Well>Tips for eating well> Quick and easy meals	You will also need far fewer convenience and takeaway products that tend to be higher in saturated fat, added sugars and added salt. This is especially important for people wanting to lose weight as convenience and takeaway products are usually higher in kilojoules. Cook once, but eat often: Cook a lean piece of meat or piece of skinless chicken.	This section seems to focus on weight loss, rather than provision of practical information about quick and easy meals. It also, unusually, mentions kilojoules again
Eat for Health Website		Meal planning Home>Eating Well>Tips for eating well> Meal Planning	Planning helps manage the budget, makes shopping easier and maximises foods that are high in nutrients, but lower in kilojoules. However, for successful weight loss mid meal snacks need to be considered part of a meal saved for later eating and be a choice from the Five Food Groups. For example: Breakfast: a small serve of wholegrain cereal, low fat milk and fruit Morning tea: a slice of fruit toast with a scrape of unsaturated margarine Lunch: a salmon wholegrain sandwich filled with plenty of salad Afternoon tea: a piece of fresh fruit Dinner: a small serve of lean grilled meat with plenty of coloured vegetables and a jacket potato Supper snack: a fruit and low fat yogurt based dessert kept until later in the evening Sample meal plan for women: Breakfast - reduced fat milk and reduced fat yoghurt; Lunch –chicken, margarine; Dinner – beef mince, unsaturated oil; Snack - reduced fat yogurt Sample meal plan for men: breakfast – polyunsaturated margarine, reduced milk; Lunch – roast beef, reduced fat cheese, polyunsaturated margarine; Dinner – olive oil; Snack – reduced fat yoghurt Sample meal plan for children 9-11yrs: Breakfast – reduced fat milk, yoghurt; Lunch: reduced fat cheese; Snack – margarine; reduced fat milk; Dinner – lamb kebab; Snack – reduced fat yoghurt	This section seems to focus on weight loss, rather than provision of practical information about planning healthy meals. It also, unusually, mentions kilojoules again. Meal plans are inconsistent in their description of fats, both hidden and added e.g. sometimes just called margarine, sometimes unsaturated, sometimes polyunsaturated, olive oil. Meat and chicken not always described as lean or fat/skin removed.
Eat for Health Website		Low fat cooking techniques	Cooking Method - Alternative	This section provides practical advice about cooking methods, with a specific focus on low

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		Home>Eating Well>Tips for eating well> Low fat cooking techniques	<p>Deep-fry - try roasting meat/chicken/fish or vegetables instead in the oven (see 'roasting').</p> <p>Shallow Fry -try using a non-stick frying pan or wok. Use just a small amount of oil or oil spray such as canola, sunflower or olive. Measure with a teaspoon (one per serve) rather than just pouring. Add a little water or stock when needed to keep the pan/wok moist if needed.</p> <p>Roasting - choose lean cuts of meat, or trim all visible fat. Place meat on a roasting/cake rack in a baking dish with 1-2cm of water. Add herbs, spices and/or mustard to meat or wine to the water for extra flavour. Try brushing meat with a marinade to prevent the meat drying out. Or cover meat with a lid or aluminium foil for part of the cooking time to retain moisture. Roast vegetables - peel or wash the vegetables and make sure you dry them well with a clean paper or tea towel. Toss first with a little unsaturated oil (using a plastic bag is great for this). Use baking paper on the tray for easy washing-up. Plan the cooking times to take out the meat 10 mins before the vegetables are done. Cover meat to rest for 10 mins before slicing. This helps meat to stay moist.</p> <p>Casserole/Stew - trim all visible fat off meat before cooking and remove chicken skin. Add lots of vegetables and or legumes after cooking, chill the casserole/stew so that any fat hardens on the surface. Skim this off before reheating and thickening. If you're in a hurry, drop in some ice cubes to cool the surface quickly.</p> <p>Cooking Ingredient - Alternative</p> <p>Milk/Yoghurt/Cream - use low or reduced fat varieties. Ricotta or blended cottage cheese with a small amount of icing sugar with or without vanilla is a great alternative for whipped cream. Light and creamy evaporated milk or double strength made up powdered skim milk, can be used in soups, quiches, sauces and casseroles instead of cream for a rich flavour. Add some blended cornflour to thicken if needed.</p> <p>Sour Cream - blend cottage cheese or ricotta & low or reduced fat milk to thin cream like consistency. Add a small amount of lemon juice or vinegar, if desired to create a sour flavour. Use low or reduced fat natural yoghurt (great on jacket potatoes, Mexican dishes and homemade potato wedges). Use light & creamy (skim)</p>	fat cooking. Focuses on using small amounts of foods low in saturated fat, taking a positive approach (although strongly nutrient-focused), rather than listing less healthy choices. However, it could be useful to be clearer about which fat/oil choices to avoid e.g. palm oil, coconut oil etc.

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			<p>evaporated milk with a dash of lemon juice or buttermilk instead of sour cream in cooking.</p> <p>Cheese - try to reduce the amount needed. Use reduced fat cheese varieties. Parmesan cheese gives more flavour & less is needed, use a fine grater, you need less cheese.</p> <p>Mix grated reduced fat cheese with oats or breadcrumbs for toppings on baked dishes. Use a potato peeler for thin shaved slices for sandwiches and toast.</p> <p>Butter/margarine/oil -use unsaturated margarine instead of butter, dairy blends, lard, copha or cooking fat.</p> <p>Reduced fat or light spreads are lower in kilojoules and great for spreading but sometimes not good for cooking.</p> <p>Use a variety of oils for cooking including canola, sunflower, olive, peanut and sesame oil – depending on the flavour. Measure oil in cooking with a teaspoon, rather than pouring. Add just one teaspoon per serve. Reduce the amount of margarine or oil used or leave out if possible (such as on bread). Use ricotta, cottage cheese, hummus, avocado or unsalted nut spreads as an alternative spread on bread for variety.</p>	
Eat for Health Website		<p>Healthy meal and snack ideas</p> <p>Home>Eating Well>Tips for eating well> Healthy meal and snack ideas</p>	<p>Breakfast: thin spread of unsaturated margarine or unsalted nut paste on wholegrain; wholegrain cereal, porridge or untoasted muesli with low fat milk or yogurt and fruit.</p> <p>Main meals: choose lean, uncrumbed or battered small pieces of meat, skinless chicken, fish to grill/steam/poach/bake/stir fry with low salt flavours/lightly fry in small amounts of unsaturated oil. Cook a lean piece of meat or piece of skinless chicken. Vegetables - steam/roast/mash/stuffed/barbeque/stir fry with a little oil.</p> <p>Side dishes: wholegrain cereals and bread based - Variety of wholegrain breads with thin spread unsaturated margarine.</p> <p>Desserts: fruit set in jelly or in a fruit crumble with low fat yoghurt/custard/flummery or a dollop of low fat ricotta cheese.</p> <p>Snacks: add a thin spread of unsaturated margarine, unsalted nut paste or some fruit on top of cooked pikelets/scones with ricotta cheese and dusted with cinnamon.</p> <p>Lunch Box Ideas</p>	

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			<p>Not all convenience and packaged foods are discretionary foods. Small, individual packs of fruit in juice, low fat yoghurts and custards, low fat cheese slices, unsalted nuts and small cans of no added salt baked beans, corn and bean mix can be useful for adding variety and usually have a longer shelf life. A treat in a lunch box doesn't need to be high in fat, added sugars or added salt. A note of affection, a joke, a sticker, hot cross bun or a few small pieces of special fruit can have the same wow factor.</p>	
Eat for Health Website		Healthy Eating for Infants, Children and Teenagers Home>Eating Well> Healthy eating throughout all of life> Healthy Eating for Infants, Children and Teenagers	<p>Dietary Guideline 1: To achieve and maintain a healthy weight be physically active and choose amounts of nutritious food and drinks to meet your energy needs - Only have water and low fat milk available for drinks at home.</p> <p>Dietary Guideline 2: Enjoy a wide variety of nutritious foods from the five groups every day - The transition to solid foods: There is no particular order to introduce new foods, however to avoid iron deficiency, iron-containing foods such as iron-fortified cereals, pureed meat and poultry dishes, or cooked plain tofu and legumes/soy beans/lentils are recommended to be included in the first foods.</p> <p>Dietary Guideline 3: Limit intake of foods and drinks containing saturated fat, added salt, added sugars and alcohol - Childcare and school lunchboxes, like meals and snacks at home, should continue to reflect the dietary guidelines and the AGHE and not include discretionary foods and drinks. Discretionary foods are higher in saturated fats, added salt, and added sugars and lower in fibre and should be kept for special occasions/party foods. While it is important not to add fats, sugars and/or salt to food for babies and young children, low fat diets are not appropriate for young children, particularly those under two years, because they are growing so fast. Full fat milks, yoghurts and cheeses should be used for children until they are two years old.</p>	<p>Comments as per dietary guideline recommendations in ADGs</p> <p>Also, no clarification that low fat milk is not suitable only as a complete milk feed for children under 2 years.</p> <p>No mention of unsaturated fats/oils allowance or as potential additional serves for more active, taller or older children.</p>
Eat for Health Website		Healthy eating when you're pregnant or breastfeeding Home>Eating Well> Healthy eating throughout all of life>	<p>Dietary Guideline 3: Limit intake of foods and drinks containing saturated fat, added salt, added sugars and alcohol - As throughout life, it is always best to limit discretionary foods high in saturated fats, added salt and added sugars for good health</p>	<p>Comments as per ADGs brochure for pregnant or breastfeeding women</p>

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		Healthy Eating when you're pregnant or breastfeeding	and to prevent health problems. By limiting discretionary foods, you will also be more likely to achieve the number of serves from the Five Food Groups that you and your developing baby needs. Foods high in fats and sugars are also higher in kilojoules, making it harder to gain only the recommended weight for pregnancy.	
Eat for Health Website		Healthy eating when you're older Home>Eating Well> Healthy eating throughout all of life> Healthy eating when you're older	Dietary Guideline 3: Limit intake of foods and drinks containing fat, added salt, added sugars and alcohol It's always good to limit saturated fats, added salt, added sugars, alcohol and low fibre choices for good health. Sometimes though, limiting fats, added salt and added sugars can mean a person who is at risk of malnutrition, actually eats too few nutrients and kilojoules and can put themselves at risk.	The heading in this section misquotes the relevant guideline. The recommendation refers to '....containing saturated fat...'
Eat for Health Website		How to understand food labels Home>Eating Well> How to understand food labels	Knowing what nutrition information to look for, can help you make the best choice for your health and avoid unnecessary saturated fat, added salt, added sugars and kilojoules. How to understand food labels (image): Total Fat - Generally choose foods with less than 10g per 100g. For milk, yogurt and icecream, choose less than 2g per 100g. For cheese, choose less than 15g per 100g. Saturated Fat - Aim for the lowest, per 100g. Less than 3g per 100g is best. Other names for ingredients high in saturated fat -Animal fat/oil, beef fat, butter, chocolate, milk solids, coconut, coconut oil/milk/cream, copha, cream, ghee, dripping, lard, suet, palm oil, sour cream, vegetable shortening Nutrition Information Panel: The Nutrition Information Panel on a food label offers the simplest and easiest way to choose foods with less saturated fat, salt (sodium), added sugars and kilojoules, and more fibre. Use the Nutrition Information Panel to compare similar packaged foods and to decide which product provides less saturated fat, salt (sodium), added sugars and kilojoules per 100gm and more fibre per serve. Health Star Rating (HSR) system: Generally, the HSR will provide the most useful source of comparison between similar food products. Where the nutrient icons are also displayed, they will provide information about the energy content of a product, as well	This section focuses on food labels and hence fats as nutrients only. Inconsistent with other sections of the DGs, it supports assessment (and implies limiting) of total fat intake as well as saturated fat. Does not differentiate different sources of fat, e.g. that saturated fat in milk, cheese and yoghurt is relatively benign (see ADGs Evidence report). Doesn't identify that HSR do not always align with ADGs recommendations.

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			<p>as the levels of saturated fat, sodium (salt) and sugars, to help you make the best choice to suit your personal circumstances.</p> <p>Ingredients List: All ingredients in a food product must be listed on the label in order from largest to smallest by weight. You can use this to spot foods that might be high in saturated fat, added salt or added sugars because these ingredients are listed in the top three. Also look out for other words on the ingredients list that flag ingredients high in saturated fat, added salt or added sugars. If fat or sugars are high on the list of ingredients, it is a good reason to check how high the kilojoules are in the amount you would eat.</p> <p>Nutrition content claims -Sometimes labels will include nutrition content claims like 'low fat', 'reduced salt' or 'high fibre'. These claims can only be used if the food meets certain criteria. While nutrition content claims can generally guide you to healthier choices, it is important to check the claim by looking at the Nutrition Information Panel. For example, products carrying 'low fat' claims may not be low in total energy (kilojoules) when compared with similar products.</p>	
Eat for Health Website		Healthy Recipes Eating Well> Healthy Recipes	<p>Recipes: include the following words – lean beef mince, unsaturated oil, olive oil, olive or canola oil spray, vegetable oil, low fat yoghurt, oil, low fat milk, reduced-fat coconut milk, reduced-fat ricotta, chicken breasts skin removed, chuck or blade steak cubed.</p>	This section takes a food-based approach, but uses low-fat or reduced-fat descriptors to indicate preferred ingredients. It doesn't include any recommendations about removing visible (saturated) fat from meat
Eat for Health Website		Recipe Modification Tips Eating Well> Healthy Recipes> Recipe Modification Tips	<p>Favourite and traditional recipes can often be modified to include more fibre, more fruit and vegetables and less saturated fat, added sugars, added salt and kilojoules.</p> <p>Using less saturated fat:</p> <ul style="list-style-type: none"> • Using less saturated fat will be good for heart health and also reduce the kilojoules in the dish. • Swap butter for unsaturated margarine or oil in recipes. • Swap high fat ingredients for low fat alternatives such as using yoghurt instead of sour cream in recipes. • Use smaller amounts of high fat ingredients e.g. use less cheese and swap to a reduced fat stronger parmesan cheese. 	This section provides more detail about modification of recipes, using a mixed food and nutrient-based approach

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			<ul style="list-style-type: none"> Remember that unsaturated fats, while better for heart health, are also high in kilojoules so still use only small amounts, especially if trying to lose weight. 	
Eat for Health Website		How to modify a recipe to include more vegetables and reduce fat Eating Well> Healthy Recipes> How to modify a recipe to include more vegetables and reduce fat	Modified Recipe: Lasagna <ul style="list-style-type: none"> Oil – ¼ cup to 1 tbsp. 500g mince to 250 g extra lean mince 125 g butter to 125 g unsaturated margarine 2 cups milk to 2 cups low fat milk 1 cup grated cheddar cheese to no cheese serve with garlic bread to serve with garden salad 	This section provides more detail about modification of recipes as an example, using a mixed food and nutrient-based approach

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Appendix 3: Data extraction table of consumer messaging regarding fats and oils in Heart Foundation Position Statements

Source	Page	Section heading	Message/s	Comments
Dietary Position Statement: Dairy & Heart Healthy Eating	1	Dietary Position Statement: Dairy & Heart Healthy Eating	<p>The Heart Foundation's position on food and nutrition recognises that healthy eating patterns do not rely on one type of food or nutrient to promote heart health. Heart healthy eating patterns are based on a combination of foods, chosen regularly, over time. This optimal combination is outlined in the Heart Foundation's Heart Healthy Eating Principles which encourage people to eat:</p> <ol style="list-style-type: none"> 1. Plenty of vegetables, fruits and wholegrains 2. A variety of healthy protein sources especially fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If choosing red meat, make sure the meat is lean and limit to 1-3 times a week. 3. Unflavoured milk, yoghurt and cheese. Those with high blood cholesterol should choose reduced fat varieties. 4. Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking. 5. Herbs and spices to flavour foods, instead of adding salt. <p>This style of eating is naturally low in saturated and trans fats, salt and added sugar and rich in unsaturated fats (MUFA, omega-3 PUFA, and omega-6 PUFA), along with wholegrains, fibre, and antioxidants. Eating this way can help improve the heart health of all Australians by reducing CVD risk factors such as high blood pressure and blood lipids and decreasing the risk of CVD events and mortality.</p>	Includes messaging around nutrients as well as foods, particularly related to fatty acids as the final paragraph of the position statement. Otherwise, the heart-healthy eating principles focus on healthy eating patterns generally consistent with the ADGs, except they provide ordered guidance on food sources of protein and do not specify fat levels for milk products (except for those with high cholesterol levels who they state should choose reduced fat varieties).
Dietary Position Statement: Dairy & Heart Healthy Eating	1	Summary	<p>Milk, yoghurt and cheese can feature in a healthy eating pattern; as long as the primary sources of fat are foods such as fish, olives, seeds, nuts and oils made from them. Based on current evidence, there is not enough evidence to recommend full fat over reduced fat products or reduced fat over full fat products for the general population. For people with elevated cholesterol and those with existing coronary heart disease, reduced fat products are recommended. The evidence for milk, cheese and yoghurt</p>	Emphasises that milk products of all fat levels can be part of healthy eating pattern consistent with the ADGs five food groups, except for people with elevated cholesterol or those with existing CVD, where reduced fat milk products are recommended. Notes that this advice does not necessarily apply for cream, butter, ice-cream and dairy-based deserts, but as no explanation is

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			does not necessarily apply for cream, butter, ice-cream and dairy based desserts; these products are not part of a heart healthy eating pattern.	provided, this could be confusing for some consumers.
Dietary Position Statement: Dairy & Heart Healthy Eating	2	Background	Of dairy fat, approximately 70% is saturated fat; 56% of which are longer-chain saturated fatty acids (C12:0–18:0) that raise low density lipoproteins (LDL-C). Around 3% of dairy fat is naturally occurring ruminant-trans fat.	Notes that due to the high saturated fat content of milk, full fat milk not recommended for people with high blood cholesterol/CVD.
	3	Evidence for dairy foods and heart health: Dairy foods and CVD risk factors and outcomes	According to the evidence base, the relationship between dairy foods and cardiovascular outcomes is mixed. However, on balance current evidence suggests a 'neutral'* relationship between dairy foods and cardiovascular risk, and a possible 'protective' relationship between dairy foods and hypertension, stroke and type 2 diabetes risk, and between yoghurt and type 2 diabetes risk. The reported increased risk with heart failure and total dairy intake is of note, as is the mixed evidence on cheese, with studies reporting inverse, and increased risk with various cardiovascular outcomes. Given this inconsistency in the evidence base, there is not enough evidence to recommend fat modification (i.e. full fat over reduced fat products, or reduced fat over full fat products) for the general population. It appears the consumption of milk, yoghurt and cheese (regardless of fat modification), at currently recommended amounts, in the context of a dietary pattern rich in vegetables, fruit, legumes, nuts, seeds, wholegrains, healthy oils and low in discretionary food and drinks (i.e. sugary drinks, alcohol and heavily processed foods), may not affect cardiometabolic risk.	Notes that including full fat milk, yoghurt and cheese as part of a healthy diet consistent with the ADGs may not increase CVD risk. This is a revised position of the HF, who were not supportive of the same advice in the ADGs 2013. Notes some mixed evidence on relationship between intake of different types of cheese and some cardiovascular health outcomes.
Dietary Position Statement: Dairy & Heart Healthy Eating	4	Evidence for dairy foods and heart health: Dairy fat and cardiovascular risk	Dairy products, and dishes made from them, are leading contributors to saturated and trans fat intake. There are established relationships between saturated fat and ruminant trans fat and elevated LDL and heart disease. Further, there is a relationship between replacing saturated fat with unsaturated fat and a reduced risk of heart disease. For this reason, reducing dairy fat intake is one recommended strategy to limit saturated fat intake for those who would benefit from LDL-C lowering dietary interventions. Cardiovascular risk is reduced when dairy fat is replaced with unsaturated fat and wholegrain carbohydrates (but not refined	The recommendation to reduce dairy fat for people with elevated cholesterol/existing CHD appears consistent with the ADGs recommendation to choose reduced fat milk, yoghurt and cheese. However the latter recommendation is based on modelling of dietary patterns, not on clinical advice.

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			carbohydrates or trans-fat). The effect of dairy fat in the diet on other lipid markers, and thus overall cardiovascular risk, is mixed. Dairy fat in cheese and in cream does not raise LDL to the same extent as dairy fat in butter. This evidence indicates caution for dairy fat consumption for people with elevated LDL ; and that milk, cheese and yoghurt should remain separately classified to butter when advising the inclusion of dairy products in a heart healthy eating pattern.	
Dietary Position Statement: Dairy & Heart Healthy Eating	5	Evidence for dairy foods and heart health: The role of dairy fat and cardiovascular risk	The influence of dairy foods on cardiovascular health depends on the broader eating pattern and the nature of foods which replace, or are replaced by, a change in dairy food intake . A systematic review of dietary patterns and cardiovascular outcomes found that dairy foods feature in some, but not all healthy eating patterns. This indicates that a heart healthy eating pattern can exist with or without dairy foods . Pooled US prospective cohorts found there appeared to be a 'hierarchy' of animal-based products, with processed meat associated with highest cardiovascular risk, followed by unprocessed meat and poultry, then dairy, then fish, then eggs. In high quality eating patterns, the role of dairy products is mixed. In summary, this evidence suggests milk, yoghurt and cheese can be included in, but are not a defining feature of, a heart healthy eating pattern .	The inclusion of milk, yoghurt and cheese as part, but not a defining feature of a healthy eating pattern is consistent with the ADGs
Dietary Position Statement: Dairy & Heart Healthy Eating	6	Conclusions	The combined evidence suggests that improving the entire eating pattern, not altering one nutrient (i.e. saturated fat) or one food (i.e. milk) in isolation, contributes to cardiovascular health. Milk, yoghurt and cheese can be consumed as part of a heart healthy eating pattern that includes vegetables, fruits, legumes, wholegrains, fish, olives, seeds, nuts and oils made from them. There is mixed evidence, but on balance it appears that milk, yoghurt and cheese have a neutral relationship with cardiovascular health . Therefore, less processed products (i.e. no added sugar, limited sodium) can be included in a healthy eating pattern. There is evidence that dairy foods and yoghurt have an inverse association with hypertension, stroke and type 2 diabetes risk . There is mixed evidence for cheese consumption , with some studies reporting reduced, no or increased risk.	The message to eat a range of healthy foods which includes milk, yoghurt and cheese is consistent with the ADGs, which allows milk products with a range of fat levels. Identification of cream, butter, ice-cream and dairy based desserts as not a part of a heart- healthy eating pattern is also consistent with the ADGs discretionary foods group. Overall, the HF found milk, cheese and yoghurt have a neutral relationship with heart health- however the literature reviews for the ADGs found evidence of a generally more positive relationship.

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			<p>The evidence suggests that while adding dairy fat will not improve an eating pattern (i.e. by choosing full fat products), removing dairy fat (i.e. by choosing reduced fat products) to make room for fat from plant sources such as olives, nuts and seeds aligns with existing evidence to lower cardiovascular risk and improve lipid profiles.</p> <p>The evidence for milk, cheese and yoghurt does not necessarily apply for cream, butter, ice-cream and dairy based desserts; products which are not a part of a heart- healthy eating pattern.</p>	
Dietary Position Statement: Dairy and Heart Healthy Eating	7	Recommendations	<p>Based on the evidence for dietary patterns, dairy foods and cardiovascular health outcomes, the Heart Foundation recommends:</p> <ol style="list-style-type: none"> 1. Rather than focusing on individual nutrients or foods, we encourage Australians to follow the Heart Foundation's Heart Healthy Eating Principles which includes eating: <ol style="list-style-type: none"> a. Plenty of vegetables, fruits and wholegrains b. A variety of healthy protein sources especially fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If choosing red meat, make sure the meat is lean and limit to 1-3 times a week. c. Unflavoured milk, yoghurt and cheese. Those with high blood cholesterol should choose reduced fat varieties d. Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking e. Herbs and spices to flavour foods, instead of adding salt 2. Unflavoured milk, yoghurt and cheese can feature in a healthy eating pattern, as long as foods such as fish, olives, seeds, nuts and oils made from them are the primary sources of fat. 3. Unflavoured milk, yoghurt and cheese are healthy snack options in preference to discretionary foods and can contribute to healthy meals when eaten with vegetables, wholegrains or fruit. 4. For people who would benefit from LDL lowering dietary interventions, reduced fat and unflavoured products are the preferred choices. 5. The evidence for milk, yoghurt and cheese does not extend to butter, cream, ice-cream and dairy-based desserts; these 	<p>The four recommendations are detailed and complicated. Messaging both around nutrients (e.g. protein sources) and food choices (e.g. fish). Overall the HF heart-healthy eating recommendations are consistent with ADGs, except for the hierarchical order of (i) preferred protein foods (favouring fish, legumes, nuts and seeds, over red meat, but silent on other foods like poultry and eggs) and (ii) preferred sources of fat (favouring fish, olives, seeds, nuts and oils made from them, over milk, cheese or yoghurt). Additionally, specifically does not specifically recommend reduced fat milk products, except for people who would benefit clinically from LDL lowering dietary interventions. The latter is a major shift in HF position. The HF effectively recommends combining milk, yoghurt and cheese with vegetables, wholegrains or fruit, and the rationale for this, and for the hierarchical recommendations re food sources of protein and fat are not always clear</p>

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			products should be avoided in a heart healthy eating pattern. Butter intake should be limited, in preference to oils rich in mono-unsaturated fats (i.e. olive oil), especially for those with dyslipidaemia.	
Dietary Position Statement: Meat & Heart Healthy Eating	1	Meat & Heart Healthy Eating Position Statement	<p>This position statement summarises contemporary evidence on the association between consumption of unprocessed meat and poultry and cardiovascular health and makes recommendations for the place of meat in heart healthy eating. The Heart Foundation's position on food and nutrition recognises that healthy eating patterns do not rely on one type of food or nutrient to promote heart health. Heart healthy eating patterns are based on a combination of foods, chosen regularly over time. This optimal combination is outlined in the Heart Foundation's Heart Healthy Eating Principles, which encourage people to eat:</p> <ol style="list-style-type: none"> 1. Plenty of vegetables, fruits and wholegrains 2. A variety of healthy protein sources including fish and seafood, legumes, nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If eating red meat, make sure the meat is lean and limit to 1-3 times a week. 3. Unflavoured milk, yoghurt and cheese. People with high blood cholesterol should choose reduced fat varieties. 4. Healthy fat choices, including nuts, seeds, avocados, olives and their oils for cooking 5. Herbs and spices added to flavour foods, instead of using salt. <p>This style of eating is naturally low in saturated and trans fats, salt and added sugar and rich in unsaturated fats (MUFA, omega-3 PUFA, and omega-6 PUFA), along with wholegrains, fibre, and antioxidants. Eating this way can help to improve the heart health of all Australians by reducing CVD risk factors, such as high blood pressure and blood lipids and decreasing the risk of CVD events and mortality.</p>	<p>Messaging is predominantly around foods, rather than nutrients, but does use the concept of "protein foods" and includes messaging around nutrients related to fatty acids in the final paragraph of the position statement.</p> <p>In general, the heart-healthy eating principles focus on healthy eating patterns consistent with ADGs, except for the provision of hierarchical guidance on protein food sources.</p>
Dietary Position Statement: Meat & Heart Healthy Eating	1	Summary	<p>Unprocessed meat and poultry can be included in a heart healthy eating pattern, but fish and legumes are preferred protein sources, due to their consistent beneficial relationship with heart health. Based on current evidence, eating unprocessed red meat should be limited to less than 350g per week. There is currently no recommended intake for unprocessed poultry. Between 1-3</p>	<p>Unprocessed meat and poultry can be part of healthy eating pattern consistent with the ADGs. Limiting unprocessed red meat to 350g per week across 1-3 meals, contrasts with the ADGs recommendation to limit red meat to no more than 455g per week, i.e. 2-3 serves per week.</p>

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			meals which include unprocessed red meat can be included per week, as part of a heart healthy eating pattern. This limit encourages the use of other protein sources in meals, including fish and seafood, legumes, nuts, eggs, poultry and dairy. Processed meat is not part of a heart healthy eating pattern; it should be limited or avoided.	Encourages the use of fish and legumes rather than red meat, but doesn't provide clear guidance around intake of poultry (recommending "small amount" can be included). Consistent with the ADGs in that advises that consumption of processed meat should be limited or avoided. Doesn't use the concept of discretionary foods at all.
Dietary Position Statement: Meat & Heart Healthy Eating	2	Background	The Heart Foundation defines unprocessed red meat to include beef, veal, mutton, lamb, pork, kangaroo, rabbit, and other game meats. The Heart Foundation defines unprocessed meat to include unprocessed red meat, as well as poultry. The nutritional composition of unprocessed red meat products varies depending on type (beef, mutton, kangaroo), cut (rump steak, etc.), fat modification (fat removed or retained), diet of the animal (grass fed, composition of grain feed) and cooking methods (raw, cooked with or without added fat). There is a higher proportion of unsaturated fat than saturated fat in Australian beef and lamb. The nutrition composition of poultry varies, depending on the cut (wing, thigh, breast, skin on or off), composition of feed, age and gender of the bird. Lean chicken breast has a higher proportion of mono-unsaturated fat and PUFA, and a lower proportion of saturated fat and total fat compared to beef and lamb. Current guidelines are universal in recommending avoidance of processed meat, due to the increased risk of developing colorectal cancer. In Australia, the diversity of protein contributing foods regularly eaten has increased between the 1995 and 2011/12 national nutrition survey. Australian adult consumption of red meat intake has fallen, while the consumption of fish, legumes and eggs has increased. Australians are still eating more red meat than the Australian Dietary Guidelines advise (<455g cooked red meat per week), with men consuming more than women.	Takes a very nutrient-based approach. Despite red meat consumption decreasing in Australia, notes consumption is still higher than the ADGs advice. Not always clear whether cooked or uncooked meat is being discussed.
Dietary Position Statement: Meat & Heart Healthy Eating	3	Evidence for meat & poultry and heart health: Cardiovascular disease, coronary	In summary, the Evidence Review found that eating white meat (poultry, turkey, rabbit) has relatively neutral effects, and eating unprocessed red meat (beef, pork, veal and lamb) has moderately adverse effects, on cardiovascular outcomes. There	Qualitatively consistent with ADGs, but recommends maximum intake of cooed lean red meat which is 105g/week lower than the ADGs based on more recent assessment of CVD risk. The limit in the ADGs is informed predominantly

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		heart disease and stroke	is evidence that eating unprocessed red meat is associated with a small amount of weight gain. The lower CVD risk observed for unprocessed meat consumption <50g per day in the observational data, reinforces a limit of 50g (cooked weight) of unprocessed meat per day (or maximum 350g per week).	by risk of colorectal cancer as other relevant studies were not available at that time.
Dietary Position Statement: Meat & Heart Healthy Eating	4	Evidence for meat & poultry and heart health: Role of unprocessed meat in healthy dietary patterns	The inclusion of up to 1 serve of unprocessed red meat or poultry per day may be reasonable in populations who are achieving healthy dietary patterns.	Potentially contradicts the position statement and could be confusing for some consumers.
Dietary Position Statement: Meat & Heart Healthy Eating	5	Conclusions	The evidence suggests a moderately adverse relationship between unprocessed red meat consumption and cardiovascular disease, suggesting a limit of up to 50g/day (cooked weight) of unprocessed red meat. At a practical level, 50g/day of unprocessed meat would be approximately 350g per week, across 1-3 meals. An overall healthy eating pattern may outweigh the potential adverse effects on cardiovascular health of consuming up to 100g of unprocessed red meat per day. The evidence suggests a neutral relationship between poultry consumption and cardiovascular disease. This suggests no strong evidence for a maximum limit but should not be interpreted that poultry intake is beneficial to cardiovascular health. Chicken, preferably with the skin removed, can be included in a heart healthy eating pattern, as part of a wide variety of other protein foods (legumes, seafood and fish, eggs, nuts, dairy) across the week. The emerging evidence for the association between unprocessed red meat consumption and type 2 diabetes is important to note, given T2DM is an independent risk factor for developing cardiovascular disease. The evidence continues to support recommendations to avoid processed meat consumption for cardiovascular health.	
Dietary Position Statement: Meat & Heart Healthy Eating	6	Recommendations	Based on the evidence for dietary patterns, unprocessed meats and poultry, and cardiovascular outcomes, the Heart Foundation recommends:	Messaging around both nutrients (e.g. protein sources) and food choices (e.g. fish). Overall heart-healthy eating recommendations are consistent with ADGs, except hierarchical order of protein foods to reduce red meat consumption

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			<p>a Rather than focusing on individual nutrients or foods, we encourage Australians to follow the Heart Foundation's Heart Healthy Eating Principles which includes eating:</p> <ol style="list-style-type: none"> 1. Plenty of vegetables, fruits and wholegrains 2. A variety of healthy protein sources especially fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If choosing red meat, make sure the meat is lean and limit to 1-3 times a week. 3. Unflavoured milk, yoghurt and cheese. Those with high blood cholesterol should choose reduced fat varieties 4. Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking 5. Herbs and spices to flavour foods, instead of adding salt <p>b. Unprocessed meat and chicken can be included, along with other sources of healthy proteins as part of a healthy eating pattern but preference is for fish and legumes as the beneficial sources of protein.</p> <p>c. Up to 350g (cooked weight) per week of unprocessed red meat can be included in a heart healthy eating pattern. If chosen, 1-3 red meat-based meals per week can contribute to healthy meals when eaten with vegetables and wholegrains and when healthy oils are used.</p> <p>d. Chicken, preferably with the skin removed, can be included in a heart healthy eating pattern, as part of a wide variety of other protein foods (legumes, seafood and fish, eggs, nuts, dairy) across the week.</p> <p>e. The evidence for unprocessed red meat and poultry does not extend to processed meat products. These foods are consistently linked to adverse health outcomes and are not included in a heart healthy eating pattern. Their intake should be avoided.</p>	(350g/week). Framing within the HF healthy eating principles provides context for other high fat foods, including dairy foods.
Dietary Position Statement: Eggs & Heart Healthy Eating	1	Position Statement	<p>This position statement summarises contemporary evidence for egg consumption and cardiovascular health.</p> <p>The Heart Foundation's position on food and nutrition recognises that healthy eating patterns do not rely on one type of food or one type of nutrient to promote heart health.² Heart healthy</p>	Messaging is predominantly around foods, rather than nutrients, but does use the concept of "protein foods" and includes messaging around nutrients related to fatty acids in the final paragraph of the position statement.

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			<p>eating patterns are based on a combination of foods, chosen regularly, over time. This optimal combination is outlined in the Heart Foundation's Heart Healthy Eating Principles which encourage people to eat:</p> <ol style="list-style-type: none"> 1. Plenty of fruit, vegetables and wholegrains 2. A variety of healthy protein sources including fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If choosing red meat, make sure the meat is lean and limit to 1-3 times a week. 3. Unflavoured milk, yoghurt and cheese. Those with high blood cholesterol should choose reduced fat varieties. 4. Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking 5. Herbs and spices to flavour foods, instead of adding salt <p>This style of eating is naturally low in saturated and trans fats, salt and added sugar and rich in wholegrains, fibre, antioxidants and unsaturated fats (omega-3 and omega-6).</p>	The heart-healthy eating principles focus on healthy eating patterns are generally consistent with the ADGs.
Dietary Position Statement: Eggs & Heart Healthy Eating	1	Summary	<p>Eggs can be consumed as part of a heart healthy eating pattern that includes vegetables, fruits, legumes, wholegrains, fish, olives, seeds, nuts and oils made from them. Based on current evidence, the relationship between egg consumption and risk of cardiovascular disease is mixed. The evidence suggests that eggs have a neutral relationship with heart health, neither remarkably increasing nor decreasing risk in the general population. For example, eggs do not make healthy diets healthier compared to foods that decrease risk, including fruits, vegetables and wholegrains. However, eggs can be a healthy snack option, contribute to healthy meals and are preferred over discretionary foods. There is evidence of risk for cardiovascular disease in people with type 2 diabetes mellitus; therefore, a maximum of 7 eggs per week is recommended.</p>	The neutral effect of eggs on cardiovascular disease is noted- this has not always been the case in positions of the HF (but has been consistently in the ADGs). Introduces the new clinically-orientated recommendation that those with type 2 diabetes should consume a maximum of 7 eggs per week to reduce the risk of CVD.
Dietary Position Statement: Eggs & Heart Healthy Eating	2	Background	<p>Eggs contain around 6g protein per 60g egg, and are also a source of saturated fat (3g/100g), mono-unsaturated fat (5g/100g) and polyunsaturated fat (1.6g/100g), including omega-3 (170mg/100g), primarily DHA and ALA. Egg yolks are high in cholesterol (approximately 200mg per egg yolk) and are a major source of dietary cholesterol in Australia. Dietary cholesterol</p>	The background is nutrient-focused, especially outlining the different types of fats in eggs. Given that saturated and trans fats have the greatest impact on plasma cholesterol, the Heart Foundation no longer sets a limit on dietary cholesterol intake. The background notes that

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			increases blood cholesterol concentrations, although the rise in most people is minimal. Foods high in saturated and trans-fat are responsible for the greatest impact on plasma cholesterol levels. In recognition of this, the Heart Foundation does not set a limit on dietary cholesterol intake. The median daily egg consumption in Australian is around 1 egg.	international recommendations, including most international dietary guidelines, has shifted in recent decades, but does not acknowledge the relatively consistent position taken in the ADGs since first developed.
Dietary Position Statement: Eggs & Heart Healthy Eating	3	Evidence for eggs and cardiovascular health: Eggs and CVD risk factors and outcomes	There is mixed evidence on the association between egg consumption and the risk of CVD, with the majority of systematic reviews and meta-analyses observing no association, a small number observing an increased risk, and recent cohort studies reporting no or inverse associations. In recent reviews, egg consumption was not associated with risk of stroke	Notes there is insufficient evidence to conclude an association between egg consumption and risk of CVD, except in these with diabetes.
Dietary Position Statement: Eggs & Heart Healthy Eating	4	Evidence for eggs and cardiovascular health: Eggs, diabetes and CVD risk	Adults with diabetes are two to four times more likely to die from heart disease than adults without diabetes. There is mixed evidence on the relationship between egg consumption and the risk of developing T2D, although more research is needed in this area as many confounders exist in this relationship. In populations with diabetes, a growing evidence base is reporting an increased risk of cardiovascular disease associated with increasing intake of eggs. In a meta-analysis of prospective cohort studies, the consumption of more than 7 eggs per week was associated with a 69% increase in CVD events. Similar relationships were observed in two other meta-analyses published in the same year, which both undertook a dose-response analysis and found statistically significant elevated risk of CHD in diabetic populations.	Adults with diabetes need to restrict their consumption of eggs to 7 eggs/week to reduce their risk of CVD.
Dietary Position Statement: Eggs & Heart Healthy Eating	4	Recommendations	Based on the evidence for dietary patterns, eggs and cardiovascular health outcomes, the Heart Foundation recommends: 1. Rather than focusing on individual nutrients or foods, we encourage Australians to follow the Heart Foundation's Heart Healthy Eating Principles which includes: 1. Plenty of vegetables, fruits and wholegrains 2. A variety of healthy protein sources especially fish and seafood, legumes (such as beans and lentils), nuts and seeds. Smaller amounts of eggs and lean poultry can also be included in a heart healthy diet. If choosing red	Comments as per previous sections in the rows above. Messaging around both nutrients As the evidence shows there is insufficient evidence to conclude an association between egg consumption and risk of CVD, except in these with diabetes, the precautionary nature of the evidence base underlying the clinical recommendation for those with cardiovascular disease who require

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			<p>meat, make sure the meat is lean and limit to 1-3 times a week.</p> <ol style="list-style-type: none"> 3. Milk, yoghurt and cheese, preferably unflavoured. Those with high blood cholesterol should choose reduced fat varieties 4. Healthy fat choices with nuts, seeds, avocados, olives and their oils for cooking 5. Herbs and spices to flavour foods, instead of adding salt <p>2. Eggs can be included as part of a heart healthy eating pattern, and can be chosen as one of a variety of protein foods including fish and seafood, legumes, nuts and seeds, and poultry in preference to unprocessed red meat.</p> <p>3. Eggs are a healthy snack option in preference to discretionary foods and can contribute to healthy meals when eaten with vegetables, wholegrains, and poached or prepared with healthy oils.</p> <p>4. People with Type 2 Diabetes Mellitus should limit their consumption of eggs to 7 per week due to the greater risk associated with developing cardiovascular disease.</p> <p>5. People with cardiovascular disease who require LDL-C lowering interventions should limit their consumption of eggs to 7 per week due to the LDL-C raising effect of eggs.</p>	LDL-C lowering interventions to limit egg consumption to 7 per week is not clear.

Appendix 4: Data extraction table of consumer messaging regarding fats and oils in other Australian grey literature on websites [#]

Source	URL / location	Page title	Message	Comment
Cancer Council Australia https://www.cancer.org.au/	Home> prevention> Nutrition and Physical Activity> Food and nutrition	Food and Nutrition	In general, eating a healthy, balanced diet reduces your risk of developing cancer, while a poor diet increases your cancer risk. There is evidence to suggest that diets high in red meat (particularly processed meats such as salami or ham) can increase the risk of developing cancer. Try to avoid eating too much processed meat. If you eat red meat try to eat small serves of lean meat and limit it to 3-4 times a week. Incorporate chicken and fish into other meals or try vegetarian alternatives.	No direct mention of dietary fat. Recommended frequency of meat consumption is higher than in the ADGs (2-3 times per week)
Diabetes Australia https://www.diabetesaustralia.com.au/	Home> Food & Activity> What should I eat?		<p>People with diabetes should follow the Australian Dietary Guidelines (link to Eat for Health brochures). Eating the recommended amount of food from the five food groups will provide you with the nutrients you need to be healthy and prevent chronic diseases such as obesity and heart disease. To manage your diabetes:</p> <p>Eat a diet lower in fat, particularly saturated fat</p> <p>Fat</p> <p>Fats have the highest energy (kilojoule or calorie) content of all foods. Eating too much fat can make you put on weight, which may make it more difficult to manage blood glucose levels. Our bodies need some fat for good health but the type of fat you choose is important.</p> <p>Saturated fat</p> <p>It is important to limit saturated fat because it raises your LDL ('bad') cholesterol levels. Saturated fat is found in animal foods like fatty meat, milk, butter and cheese. Vegetable fats that are saturated include palm oil (found in solid cooking fats, snack foods or convenience foods) and coconut products such as copha, coconut milk or cream.</p> <p>To reduce saturated fat:</p> <p>Choose reduced or low-fat milk, yoghurt, cheese, ice-cream and custard</p> <p>Choose lean meat and trim any fat off before cooking</p>	<p>Directs to follow the ADGs but advised to lower (total) fat, particularly saturated fat, which is inconsistent with the ADGs, except for some terminology in healthy weight chapter.</p> <p>Includes milk based desserts under reduced or low-fat milk products.</p> <p>Provides practical tips on how to reduce saturated fat- but guidance is very nutrient-based.</p> <p>Recommended amount of fish per week is higher than in the ADGs.</p>

Source	URL / location	Page title	Message	Comment
			<p>Remove the skin from chicken, duck and other poultry (where possible, before cooking)</p> <p>Avoid using butter, lard, dripping, cream, sour cream, copha, coconut milk, coconut cream and hard cooking margarines</p> <p>Limit pastries, cakes, puddings, chocolate and cream biscuits to special occasions</p> <p>Limit pre-packaged biscuits, savoury packet snacks, cakes, frozen and convenience meals</p> <p>Limit the use of processed deli meats (devon/polony/fritz/ luncheon meat, chicken loaf, salami etc.) and sausages</p> <p>Avoid fried takeaway foods such as chips, fried chicken and battered fish and choose BBQ chicken (without the skin) and grilled fish instead</p> <p>Avoid pies, sausage rolls and pastries</p> <p>Rather than creamy sauces or dressings, choose those that are based on tomato, soy or other low fat ingredients</p> <p>Limit creamy style soups.</p> <p>Polyunsaturated & monounsaturated fats</p> <p>Eating small amounts of polyunsaturated and monounsaturated fats can help ensure you get the essential fatty acids and vitamins your body needs.</p> <p>Polyunsaturated fats include:</p> <ul style="list-style-type: none"> • Polyunsaturated margarines (check the label for the word 'polyunsaturated') • Sunflower, safflower, soybean, corn, cottonseed, grapeseed and sesame oils • The fat found in oily fish such as herring, mackerel, sardine, salmon and tuna. <p>Monounsaturated fats include:</p> <ul style="list-style-type: none"> • Canola and olive oils • Some margarines • Avocado. <p>Ideas for enjoying healthy fats</p> <ul style="list-style-type: none"> • Stir-fry meat and vegetables in a little canola oil (or oil spray) with garlic or chilli 	

Source	URL / location	Page title	Message	Comment
			<ul style="list-style-type: none"> • Dress a salad or steamed vegetables with a little olive oil and lemon juice or vinegar • Sprinkle sesame seeds on steamed vegetables • Use linseed bread and spread a little canola margarine • Snack on a handful of unsalted nuts, or add some to a stir-fry or salad • Spread avocado on sandwiches and toast, or add to a salad • Eat more fish (at least three times a week) because it contains a special type of fat (omega-3) that is good for your heart. • Do more dry roasting, grilling, microwaving and stir-frying in a non-stick pan • Avoid deep fried, battered and crumbed foods. 	
Public Health Association of Australia https://www.phaa.net.au/	https://www.phaa.net.au/documents/item/3793	Palm Oil in Food – Policy Position Statement	<p>Australian, New Zealand, and work health and nutrition bodies recommend limiting our intakes of saturated fat. Palm oil contains a high proportion of such fat. One of the key impacts in countries and regions where palm oil is produced is deforestation. The impacts of deforestation include greenhouse gas emissions that contribute to global warming and biodiversity loss.</p> <p>Key policy positions:</p> <ol style="list-style-type: none"> 1. All individual oil sources on food labels should be declared, including the country of origin, to assist consumers in making food choices in keeping with the Dietary Guidelines. 2. Transparent labelling of palm oil will provide further impetus to develop the sustainable palm oil industry as consumers demand, and will have benefits for reducing the negative environmental, social and economic impacts of palm oil production, which is essential for population health. 	<p>Reduce palm oil to reduce saturated fat intake and reduce environmental impact.</p> <p>Food labels containing individual oil sources to assist consumer purchases.</p>
Dietitians Association of Australia https://daa.asn.au/	Smart Eating Fast Facts> Healthy Eating> What is the best type of fat for a healthy heart	What is the best type of fat for a healthy heart	<p>There's a lot of confusion about fats. The truth is, not all fats are equal. Unsaturated fats are the 'healthy' fats and it's important to include these as part of a healthy diet. They help to keep your cholesterol levels in the healthy range and are great for our skin, eyes, and brain.</p>	<p>Advice consistent with the ADG.</p> <p>Provides practical guidance on how to increase unsaturated fats</p>

Source	URL / location	Page title	Message	Comment
			<p>Enjoy healthy fats in small amounts each day by:</p> <ul style="list-style-type: none"> • Cooking with healthy fats like extra virgin olive oil • Using unsaturated fats in place of saturated – e.g. use avocado or table spread in place of butter in your sandwiches • Eating fish and seafood, particularly oily fish like salmon at least twice a week • Snacking on nuts, or add them to your salads and stir fries • Using nut and seed butters, like peanut, almond, and tahini • Using avocado in salads, and on toast for breakfast. <p>Also try to avoid food high in saturated and trans fats. These fats are not so healthy, and can raise our blood cholesterol levels – one of the risk factors for heart disease.</p> <p>To reduce the saturated fat in your diet remember to:</p> <ul style="list-style-type: none"> • Choose lean meats and trim any visible fat • Use mainly reduced fat dairy products • Limit the amounts of extra foods you eat such as biscuits, pastries and chips • Use table spreads that list trans fat as < 0.1 g per 100g 	and reduce saturated and trans fats.
Australian Medical Association https://ama.com.au/	Home> Advocacy> Position Statements> Nutrition-2018	Nutrition-2018	<p>Improving the nutrition and eating habits of Australians must become a priority for all levels of government. Governments should consider the full complement of measures available to them to support improved nutrition, ranging from increased nutrition education and food literacy programs, through to mandatory food fortification, price signals to influence consumption and restrictions on food and beverage advertising to children.</p> <p>Australian Dietary Guidelines and related resources must reflect contemporary evidence and be reviewed regularly.</p>	No direct mention to fats. Supports ADGs and regular updates to ensure consistent with contemporary evidence.
Dairy Australia https://www.dairyaustralia.com.au/				No mention of dietary fat or oils identified

Source	URL / location	Page title	Message	Comment
Meat and Livestock Australia https://www.mla.com.au/	Home> Research and Development> Human Nutrition	Human Nutrition	<p>Our commitment to nutrition</p> <p>Meat and Livestock Australia promotes consumption of red meat in a healthy diet as recommended in the Australian Dietary Guidelines.</p> <p>Lean red meat is recommended in a healthy diet because it is an excellent protein source of iron and zinc, essential nutrients important for good health. Red meat is a popular protein in the Australian diet and is enjoyed in a variety of meals, mostly for dinner, an important time for physical and emotional nourishment. Our investments in research and development provide practical 'how to' guidance for enjoying red meat in healthy balanced meals in line with the Australian Dietary Guidelines.</p> <p>Nutrition facts, information and resources are available from MLAhealthymeals.com.au; Healthy Eating https://www.mlahealthymeals.com.au/globalassets/mla-healthy-meals/documents/brochures/your-guide-to-healthy-balanced-meals-web-version-final.pdf</p>	Main webpages are clearly consistent with the ADG, however, <i>Your Guide to healthy, balanced meals</i> , includes recipes with protein serves higher than the ADGs recommendations .
Australian Eggs https://www.australianeggs.org.au/	Home> Nutrition		<p>Is there any single food that provides as many nutritional benefits as the egg? Nature's original superfood is packed with 11 different vitamins and nutrients in each serving. And with just 310 kilojoules (or 74 calories), in each egg, they are one of the healthiest foods you can eat. They're the perfect protein source because they contain all nine essential amino acids needed to meet your body's needs. Plus they're a natural source of key nutrients, including omega-3 fatty acids, Vitamins A, D, E, and B12, antioxidants, and choline.</p>	Only mentions that eggs are a source of omega-3 fatty acids. No reference to saturated/unsaturated fats in diet.
Growcom https://www.growcom.com.au/				No mention of dietary fats or oils.
Australian Food and Grocery Council	Home> Member Services> Health, Nutrition & Scientific	Industry Action on sugar, salt and fat	<p>TRANS-FATS</p> <p>Trans-fats were largely removed from the Australian food supply during the 1990s and now contribute approximately 0.5-0.6% of dietary energy to the diets of Australians. This is well</p>	No mention of dietary fats or oils except for industry action to reduce trans-fats. No reference to ADGs (although a representative

Source	URL / location	Page title	Message	Comment
	Affairs> Industry Action on sugar, salt and fat		below the WHO recommendations of less than 1% of dietary energy. Repeated surveys of foods in Australia have confirmed very low levels of trans-fats., with the latest Australian Health Survey data confirming dietary intakes are very low. FSANZ is confident this is not a public health issue which demands regulations (labelling or other restrictions). This is an example of food industry innovation through product reformulation to protect public health – with Australia leading the world on this issue.	of the AFGC was appointed to the ADGs working group)
Healthy Weight Guide https://www.healthyweight.health.gov.au/				Advice consistent with the ADGs, includes AGTHE and links to ADGs resources on the Eat for Health website

Note: Detailed data extracted only where messaging was potentially inconsistent with the ADGs.

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Appendix 5: Data extraction table of fats and oils messaging and consumer understanding from included reviews

Title, Authors, Publication year, Country	Message / research findings (qualitative/quantitative)	Intent of application	Impact on consumer understanding/ knowledge/intake	Author reported evidence/ strengths/limitations of approach taken	Comments
A healthy approach to dietary fats: understanding the science and taking action to reduce consumer confusion Ann G. Liu, Nikki A. Ford, Frank B. Hu, Kathleen M. Zelman, Dariush Mozaffarian and Penny M. Kris-Etherto. 2017 United States [9]	1980s - reduce total dietary fat 1985 US Dietary Guidelines [61] · 'Avoid too much fat, saturated fat and cholesterol'	Reduce total fat to reduce saturated fat and energy intake	- Increase in carbohydrates (refined carbohydrates and added sugars) and avoidance of nutrient-dense foods rich in unhealthy unsaturated fats such as nuts, seeds, avocados and vegetable oils. Author noted these trends are not unique to the US, with data from 2011-2013 Australian Health Survey showing dietary trends mirroring those in the US.	Single nutrient targets have worked well for treating deficiency diseases but are problematic for addressing chronic diseases. A focus on consumption of specific foods and overall dietary patterns can substantially affect chronic disease risk.	- Not a systematic review, but a report of papers presented at an academic meeting - Funding by avocado groups, with vested commercial interests, potentially introduced bias e.g. selection of speakers - Details of specific health messaging unclear - Industry response not presented e.g. labelling and marketing of foods as low fat - So unclear if consumer impacts were in response to messaging from health groups and/or industry marketing - Predicted dietary changes reflected in Australian Health Survey dietary trends -Concomitant decrease in burden of disease due to CHD not discussed – unclear of the attribution of dietary change to this.
	2015 – US Dietary guidelines [50]: · Limit saturated fat <10%, no upper limit for total fat (lack of evidence)	Emphasises types of fat within healthy eating patterns. Recommended healthy dietary pattern options	· Rather than focusing on level of SFA or total CHO, focus on specific foods, support the new era for making food-based dietary	Replacing SFA with total CHOs or refined/added sugars does not reduce CVD risk. Replacing SFA with high quality CHOs is associated with lower	- US Dietary Guidelines include specific guidance around % energy derived from saturated fat; however in Australia this is part of NRVs (AMDR) not the ADGS 2013

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		that: 1) emphasise vegetables, fruits, whole grains, seafood, legumes, & nuts, 2) include moderate amounts of low-fat dairy products, 3) are lower in red and processed meats, 4) limit refined grains and sugar-sweetened foods and beverages.	recommendations which are both more biologically sound and more practical.	CHD risk. PUFA are the most beneficial replacement nutrient for reducing CVD risk. Protective association between dairy SFA and risk of CVD. The specific matrix of different foods may modify the effect of SFA on CHD.	- Therefore the points raised would move the US dietary guidelines closer towards the ADGs approach, but imply the latter could move more towards a specific food-based approach. - However the recommendations still include reference to low fat dairy products, so remain a mix of food-based and nutrient-based approaches.
	2015 – Canadian Heart & Stroke Foundation [51] · No thresholds or limit on saturated fat	Focus on a healthy balanced dietary pattern	Not provided	In prospective cohort studies that provide better evidence for dietary habits and CHD, higher trans fat intake is consistently associated with elevated risk of CHD [62], whereas the effects of dietary saturated fat on CHD risk are less consistent [63].	-Recommends a dietary pattern approach, but only provides nutrient-specific evidence to support this -Needs to control for different food vehicles in nutrient assessment – e.g. given the current evidence base [3, 7], if dietary patterns were high in full fat milk and milk products (except butter and cream) and other healthy food sources of saturated fats, this could explain the lack of effects of dietary saturated fat on CHD risk. However, such analysis controlling for confounded dietary variables was not conducted.

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					- the word 'balance' does not test well in Australia- with consumers relating this to a balance of unhealthy and healthy foods (ADGs 2013)
	2015 – US Food and Drug Administration [64] · Partially hydrogenated oils are no longer safe and should be removed from the food supply.	Limit trans fats in diet	Not provided		-The FSANZ report on trans fats shows that 10% of the Australian population is at risk of excess intake of trans fat, and these are mainly the most vulnerable groups such as Aboriginal and Torres Strait Islanders who are already at elevated risk of CVD. - Diet surveys of trans fats in Australia are based on analysis of foods purchased in high SES areas. Random nation-wide sampling is required as per international good practice. -Therefore the current finding that trans fat intake is low in the Australian population needs to be tested, to be able to provide evidence-based dietary messaging.
	2009 – Knowledge of diet fat quality (16 countries) [65] · 64% consumers were confused about the role of fats and found available information contradictory. · 90% consumers associated something negative to fat: mostly in women this was	To assess whether consumers are interpreting general dietary messaging around fat as intended.	· Most consumers believe that their fat intake should be as low as possible and that fat is not needed for a healthy diet.	Science on dietary fat and CVD is complicated, therefore research communications and dietary recommendations should accurately	- Data based on surveys to measure impact of dietary recommendations and guidelines. - Timing of surveys may reflect previous dietary guidelines but hasn't been controlled for in analysis.

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	<p>related to obesity; mostly in men this was related to CHD.</p> <p>2014 –IFICF Food & Health Survey (US) [66]</p>		<ul style="list-style-type: none"> · US consumption of discretionary foods is high. 	interpret the complexity of the evidence.	
	<p>2014/2015 –IFICF Food & Health Survey (US) [66, 67]</p> <ul style="list-style-type: none"> · Rate of accurate identification of healthy fats was higher when focused on whole food sources rather than the specific fats/fatty acids (i.e. MUFA & PUFA). · While 67% of consumers are trying to limit their fat intake, few are aware of how much fat they should actually be eating. 	Determine consumer understanding of dietary fat intake.	<ul style="list-style-type: none"> · Chemical terms for categorizing fats/fatty acids do not resonate with consumers. · Single-nutrient-based targets can quickly become confusing to the average consumer. 	<p>Communication about fat needs to include simple, easily understood messages focused on overall dietary patterns and foods rather than single nutrients are important. As dietary guidance is shifting away from total fat reduction to emphasizing types of healthy foods and overall dietary patterns, nutritionists should stop using low-fat terminology and instead talk about healthy foods. “How to” messages should inform the public of specific foods that are sources of “healthy fats”. Focusing on total diet quality and food patterns provides easily actionable messages for consumers rather than talking about</p>	

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				percentages of specific fats. The best messages are actionable, easy to implement, and easy to visualize. Recommends specification of practical dietary substitutions with a "compared to what" approach rather than general "eat more/less" messaging.	
Literature review on consumer knowledge, attitudes and behaviours relating to fats and oils and fats and oils labelling. FSANZ 2017 Australia [8]	2003 Australian study [68] Consumers considered that: · fat content is the best indicator of a fattening food. · fresh food is less fattening than processed foods, except for avocado and nuts. · saturated fat is more fattening than unsaturated fat. 2008 and 2012 Australian surveys and 2010 UK survey [69-71] · Consumers were confused about energy density of nutrients (fat versus sugar and different fats) · In the Australian studies only 23-25% identified that fat is the most energy dense macro-nutrient · In the UK study 37% identified that fat is the most energy dense macro-nutrient	Assessed the level of general consumer understanding of dietary fats and oils	Some awareness of fat content in foods. Limited knowledge of energy content of fats and impact on body weight and health.	Focuses on energy content of fats and foods containing fats	- Data based on focus groups and surveys - Timing of focus groups and surveys may reflect previous dietary guidelines given messaging may have changed over time, and results need to be interpreted in context - The specific messaging being tested was not always clear and this was not always consistent with formal dietary recommendations and guidelines - Vast majority of evidence predates 2013 ADGs messaging.

Title, Authors, Publication year, Country	Message / research findings (qualitative/quantitative)	Intent of application	Impact on consumer understanding/ knowledge/intake	Author reported evidence/ strengths/limitations of approach taken	Comments
	<ul style="list-style-type: none"> In the UK study only 12% knew that all fats contain the same level of energy per weight. <p>2006 US focus groups [72]</p> <ul style="list-style-type: none"> The majority of consumers considered that fats and oils should be avoided or limited in the diet. <p>2016 Swiss study [73]</p> <p>assessing consumers ability to sort the healthiness of foods, found that consumers ranked products on the basis of perceived:</p> <ul style="list-style-type: none"> fat content and level of processing 				
	<p>2008 Australian and NZ online survey [74]</p> <ul style="list-style-type: none"> 33-34% consumers concerned about total fat; 29-33% consumers concerned about SFA; 22-27% consumers concerned about TFA <p>2003 Aus. focus groups [68]</p> <ul style="list-style-type: none"> Consumers differentiated fats in 2 categories in various ways, i.e. whether they were healthy/unhealthy, natural/processed or saturated/unsaturated <p>2005 Aus. focus groups [75]</p> <ul style="list-style-type: none"> Good fats are needed in the diet Identified some food sources <p>2005 Aus. consumer interviews [76]</p> <ul style="list-style-type: none"> Most consumers did not distinguish between 'good' and 'bad' fats, instead considered all fats risky 	Assessed how well different types of fats and oils are understood by consumers	<ul style="list-style-type: none"> Australian consumers have basic awareness of fats- identifying these as good and bad. US consumers have more knowledge about omega-3 and TFA. Overall, understanding of fat types and food sources was limited. As specificity of information being tested increases, knowledge decreases. 	More recent international studies showed increased understanding of different types of fats and oils. It was considered that this could reflect the results of more recent studies of food and health relationships and/or better communication including food labelling	- Vast majority of Australian evidence predates 2013 ADGs messaging

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	<ul style="list-style-type: none"> · Small number identified bad fats as SFA and animal fat as risky substances. <p>2010 US survey [77]</p> <ul style="list-style-type: none"> · Aided awareness of SFA was high, with less awareness of PUFA, TFA, MUFA, omega-3. <p>2009 US survey [78]</p> <ul style="list-style-type: none"> · Awareness of SFA and TFA was higher than of PUFA and MUFA. Knowledge about food sources of different fats was low. <p>2017 US survey [79]</p> <ul style="list-style-type: none"> · Awareness of omega-3 FA as healthy and SFA as unhealthy were higher than awareness of unsaturated FA & EPA/DHA being healthy. <p>2009 multi-country internet survey [65]</p> <ul style="list-style-type: none"> · Consumer recognition of omega-3 FA was higher than of SFA. · Classified types of unsaturated FA s as 'good' and SFA/TFA as 'bad'. · Higher 'do not know' responses for omega-6FA, MUFA & TFA compared to other fats. · Around half of consumers do not know whether fats are good or bad. <p>2006 US focus groups [72]</p> <ul style="list-style-type: none"> · Consumer awareness of terms SFAs and UNFAs was higher than for other more specific fats. Unsure if TFA was 'good' or 'bad', but knew that omega-3FAs were 'good' <p>2007 US survey [80]</p>				

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	<ul style="list-style-type: none"> · Consumers aware some fats are healthier than others and that eating certain fats is important for good health · More aware of SFA, PUFA, MUFA, TFA, omega-3/omega-6 FA than of EPA/DHA <p>2012 Fr, US, Canadian / 2017 US survey [79, 81]</p> <ul style="list-style-type: none"> · High awareness of omega-3FA but not of different types EPA/DHA <p>2011 Canadian study [82]</p> <ul style="list-style-type: none"> · Awareness of TFA was high, but more knowledge about them poor (e.g. unsure health benefits or food sources) <p>2014 Spanish survey [83]</p> <ul style="list-style-type: none"> · Consumer knowledge of different fats decreased with specificity. <p>2013 US focus group [84]</p> <ul style="list-style-type: none"> · Consumers found to have better high level knowledge of fats and oils but struggle with more specific knowledge. 				
	<p>2003 Aus. focus groups [68]</p> <ul style="list-style-type: none"> · Consuming some fat is healthy. · Dietary fat is only 'fattening' when it is consumed in excess. <p>2012 Aus. survey [70]</p> <ul style="list-style-type: none"> · 87% identified that Australians need to eat less highly processed fatty foods. · 45% consumers considered SFA is the most important fat to consume less of · 33% consumers identified TFA, 2.5% MUFA, 3.1% PUFA as most important fats to cut down on and 17% were unsure 	<p>Are consumers aware of guidelines or messages about fats and oils? What are the messages and where are they sourced from?</p>	<p>Consumers are confused about the messaging around fat. They have better knowledge of SFA and TFA than USFA, but are not clear about the recommended amounts to consume. Messages around terms such as 'moderate' are</p>	<p>Evidence suggests messaging around reducing SFA is clearer than for increasing unsaturated FA, with more practical advice wanted and needed. Exact wording of different messages tested is not always clear. Neither is the source of messaging always clear. However, consumers clearly</p>	<p>- All evidence predates 2013 ADGs messaging</p>

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	<ul style="list-style-type: none"> · 58% consumers selected low fat dairy foods as recommended as part of healthy diet, 24% selected full-fat & lower fat. <p>2009 multi-country study [65]</p> <ul style="list-style-type: none"> · 41% consumers agreed <i>fat is important in diet</i> · 51% consumers agreed that “<i>contradictory information leaves me confused about fat</i>”; · -64% agreed ‘government, experts, food companies and media give contradictory messages about fats’. · Unsure of recommended fat intake levels. · 60% consumers stated fat intake level should be less than 14% of total energy. <p>2008 multi-country [85]</p> <ul style="list-style-type: none"> · 60% consumers aware they should eat less fat, however, >50% consumers thought they should <i>eat less PUFA</i>. · Over 45% consumers thought they should eat less SFAs and TFAs and eat more omega-3 fatty acids. <p>2010 Canadian survey [86]</p> <ul style="list-style-type: none"> · Dietary recommendations consumers found most <i>difficult to follow were limiting foods</i>: red, meats, full fat dairy, fatty snack foods and fried food · Recommendations relatively <i>easy to follow was to limit added saturated fats</i>: low fat cooking methods, avoid foods containing TFA and use of oils high in USFA. <p>2006 US focus groups [72]</p> <ul style="list-style-type: none"> · Expressed confusion about changing fat advice 		<p>considered too vague.</p> <p>Better adherence to limit added fats than limit foods high in ‘hidden’ fats.</p> <p>However, it is not clear if this is due to effective messaging or the relative ease of following recommendations or both.</p>	<p>perceive that contradictory messages about fat from experts, food companies and media is confusing.</p>	

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	<ul style="list-style-type: none"> Considered the 'Moderate' term too vague as a guideline and advice should include a specific amount, such as household measures (e.g. teaspoons) <p>2010 UK interview/survey [87]</p> <ul style="list-style-type: none"> Consumers had relatively good understanding of recommendations for fat, TFAs & omega-3FAs, but limited knowledge for PUFA & MUFA. 				
	<p>2005 Aus. focus groups / 2012 Aus. survey [70, 88]</p> <ul style="list-style-type: none"> Some awareness of positive health effects of omega-3FA but still some uncertainty of whether to eat less or more omega-3FA. <p>2014 interviews Aus. Aboriginal community [89]</p> <ul style="list-style-type: none"> Consumer understand some of the negative health impacts of dietary fat on health <p>2010 US study [77]</p> <ul style="list-style-type: none"> Consumer understanding of health effects of different fats limited except for SFA. Understanding of health effects of different fats was lower than awareness, especially for PUFA and MUFA. <p>2009 US focus groups [80]</p> <ul style="list-style-type: none"> Awareness of different fats and health relationships. Fats, SFA and TFA bad, omega-3FA good. <p>2017 US/German survey [90]</p> <ul style="list-style-type: none"> Consumers were aware of positive health effects of omega-3FA, but unaware how 	Do consumers understand the relationships between different fatty acids and health?	Limited knowledge of health benefits beyond links with consumption of SFA and increased risk of CVD. Consumers may be able to identify different fats but do not understand health benefits. Neither do they understand how to action relevant dietary guidance.	There is a relatively good understanding of health risks associated with consumption of SFA and the health benefits associated with consumption of omega-3FA. However, there is uncertainty about how to translate dietary guidance into practice.	<ul style="list-style-type: none"> Vast majority of Australian evidence predates 2013 ADGs messaging Knowledge and understanding of the health risks and benefits of specific fatty acids does not necessarily help consumers improve their diet

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	<p>much should be consumed and dietary sources of omega-3FA.</p> <p>2013 US focus gps [84]</p> <ul style="list-style-type: none"> · Most consumers not able to state reasons for perceiving olive oil as healthy. 				
	<p>2005 Aus. interviews [76]</p> <ul style="list-style-type: none"> · Consumers expressed concern about dietary fats and taking steps to limit intake. <p>2010 Aus. lit review red meat consumption [91]</p> <ul style="list-style-type: none"> · Dietary messages for reducing SFA have increased consumer trimming fat from meat. <p>2009 US survey [78]</p> <ul style="list-style-type: none"> · Consumers self-reported reducing intake of TFA and improved awareness of TFA has improved behaviours in grocery shopping. However, overall knowledge, especially regarding food sources of SFA and TFA, remains relatively low, <p>2015 US survey [92]</p> <ul style="list-style-type: none"> · 60-70% consumers reported that they tried to limit total fat, SFA and TFA · 25% consumers reported that they tried to limit PUFA and MUFA (in contravention of dietary guidance), however, higher 'don't know for these USFAs, suggesting confused or unaware about UNFAs. <p>2010 Spain study [93]</p> <ul style="list-style-type: none"> · Consumers with healthy eating habits or better health knowledge were more likely to report avoiding fat or consuming lower fat choices <p>2010 Canadian survey [94]</p>	<p>Are consumers attempting to change their intake of fats and oils? If so, why and how?</p>	<p>Most attempts to reduce fat centred on SFA and TFA- focus on reduction of added fats or visible fat (e.g. cutting fat off meat). Some evidence that knowledge of TFA does not deter eating discretionary foods. Confusion around reducing total fat and increasing unsaturated FAs.</p>	<p>Self-reported changes were not validated against objective measures of food intake; results likely to be affected by social desirability bias. Most evidence centred on practical strategies that were perceived as easiest to implement, such as reducing added SFA (such as butter/cream) and removing visible fat sources.</p>	<ul style="list-style-type: none"> - Vast majority of Australian evidence predates 2013 ADGs messaging - Results suggest practical guidance centred on foods, rather than nutrients, is potentially most effective in supporting dietary improvements

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	<ul style="list-style-type: none"> · Consumers self-reported changing food purchases to reduce TFA. <p>2017 US survey [79]</p> <ul style="list-style-type: none"> · 20% consumers agreed they had 'cut back on foods higher in saturated fat' over the past year, 40% reported they had achieved this for more than a year. <p>2006 US focus group [72]</p> <ul style="list-style-type: none"> · Consumer awareness of advice to lower SFA by substituting fats with oils – changes reported included cooking with oil instead of butter or lard, trimming meat fat, and baking or grilling meat instead of frying. <p>2011 Canadian survey [82]</p> <ul style="list-style-type: none"> · Consumers with higher dietary knowledge were more likely to reduce TFA. · 63% consumers reported that they would not stop eating favourite snack food if knew it had TFA - 56% of those concerned about TFA specifically, also reported that they would not stop eating their favourite snack food if they knew it was high in TFA. <p>2009 Danish interview [95]</p> <ul style="list-style-type: none"> · Consumers reported choosing meat with lower fat content 				
	<p>2013 Aus. focus group [96]</p> <ul style="list-style-type: none"> · Consumers perceived 'healthy' was associated with raw, natural, fresh foods and products with simple ingredient lists · Consumers perceive 'unhealthy' was associated with level of product processing, complexity of ingredient list, and foods high in sugar, salt and fat 	Do consumers understand which foods are high in fats and oils?	Choosing healthy foods is not always related to perceived fat content. Natural less processed food is seen as healthier than processed food,	Evidence presented suggest poor consumer understanding of fat levels in food, with the use of alternate markers as measures of healthiness (e.g.	- Majority of Australian evidence predates release of 2013 ADGs messaging

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	<ul style="list-style-type: none"> · Olive oil was associated with healthy · When classifying foods perceived as having both healthy and unhealthy traits (nutty muesli bars), consumers rely on one trait only to decide (e.g. nuts (healthy) or 'chemicals' (unhealthy)). <p>2003 Aus. focus groups and survey [68]</p> <ul style="list-style-type: none"> · Natural foods were seen as not fattening, except for avocado & nuts (suggesting some consumers are aware of plant-based sources of fat and the energy density of this). · Processed foods seen to be more fattening. <p>2005 Aus. focus groups [75]</p> <ul style="list-style-type: none"> · Consumers could generally identify good & bad fats, but chose 'natural' butter over margarine mainly because of concern about artificiality of margarine. <p>2014 Aus. Aboriginal interviews [89]</p> <ul style="list-style-type: none"> · Traditional foods seen healthy, take away and high fat store foods associated with feelings of heaviness. <p>2003 NZ milk study [97]</p> <ul style="list-style-type: none"> · 25-33% consumers agreed that 'all milks are high in fat' and strongest predictor of this was agreement that 'fruit juice is better for you than milk'. <p>2009 multi-country survey [65]</p> <ul style="list-style-type: none"> · Authors stated consumers appear to be cutting out more visible fats (good & bad) but consuming a lot of hidden fats (diary, cookies, pastries and excess fat). 		<p>despite knowledge of good and bad fats (e.g. butter preferred over margarine). Some evidence of poor knowledge of fat content in foods (e.g. some consumers believed all milk is high in fat, and that fruit juice healthier than milk). Evidence of consumers reducing added fats and visible fats, but not hidden fats in food.</p>	<p>natural, less processed).</p>	

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	<ul style="list-style-type: none"> · 50% consumers chose butter over margarine as better for health, but 67% identified SFA as bad while 17% didn't know 2012 multi-country survey [81] <ul style="list-style-type: none"> · Better understanding of fat type in butter and olive oil than semi-skim, skim milk and margarine. 2006/2011 US surveys [98, 99] <ul style="list-style-type: none"> · Consumer underestimate energy, fat and SFA content of less healthy & very unhealthy restaurant items, but were more accurate with healthy items. As energy and fat increases, so does consumer underestimation. 				
	2013 Aus. survey [100] <ul style="list-style-type: none"> · For all food categories/groups, consumers considered total fat content of a product more important than saturated fat content. 2005 Aus. focus groups [75] <ul style="list-style-type: none"> · Consumers identified vegetable oils, fish oils & USFA as good fats and SFA & animal fats as bad fats. 2012 Aus. /2009 US /2012 multi-country surveys [70, 78, 81] <ul style="list-style-type: none"> · Many consumers don't know the SFA content of foods or food sources, making it difficult to follow dietary recommendations. · 2009 US study found many consumers don't know food sources of TFA. 2017 US review [9] <ul style="list-style-type: none"> · Consumers appear to be aware of total dietary fat, however their understanding of the importance of fat quality and the sources of dietary fat is lacking. 	Do consumers understand which foods are high in different types of fats and oils?	Evidence that consumers are confused about the message fat, with total fat still used to gauge food selection and intake. Knowledge of fat quality and food sources of different fats is poor.	Majority of evidence predates 2013 which may explain consumer focus on total fat versus specific fats. Consistent evidence that consumers lack knowledge of different types of fats and their food sources making it difficult to follow dietary recommendations.	- Majority of Australian evidence predates release of 2013 ADGs messaging

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	<p>2010/2011 Canadian surveys investigating TFA [82, 94]</p> <ul style="list-style-type: none"> · Consumers associate TFA with processing, however were less able to identify which foods contain TFA and which foods were high in TFA. Failing to link milk with TFA and linking non-hydrogenated margarines to TFA suggests that consumers may associate TFA with processing. <p>2006 US survey [72]</p> <ul style="list-style-type: none"> · Consumers had difficulty identifying the types of fats in some foods, particularly processed meats, margarines, nuts & dairy · TFA & omega-3FA were the most difficult for consumers to link with specific foods <p>2010 UK survey [87]</p> <ul style="list-style-type: none"> · Consumers were most accurate at identifying foods high in fat & SFA than those high in sugar & salt. However, they had difficulty identifying the fat content of some foods (e.g. yoghurt) <p>2009 multi-country survey [65]</p> <ul style="list-style-type: none"> · Consumers ability to identify foods that contain essential fats was low. <p>2005 Belgium survey on fish [101]</p> <ul style="list-style-type: none"> · Overall poor consumer knowledge that fish contains omega-3FAs <p>2007 US focus groups/2017 US & Germany [80, 90]</p> <ul style="list-style-type: none"> · Evidence of consumer knowledge of omega-3FA food sources, particularly fish <p>2012 Spanish study/2009 US study [78, 102]</p>				

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	<ul style="list-style-type: none"> · Consumers are unaware that animal foods are the main sources of SFA in the diet. · Less than half consumers identified that PUFA are mainly in vegetable sources. 				

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