Appendix 2: Full version of Table 4: Overview of methodology employed in the report development

Authority / Reference	Carbohydrate exposures	Health outcomes	Time period	Studies included/excluded
Australian National Health and Medical Research Council (NHMRC) 2013 (ref 4)	Food-based exposures only, including the following main carbohydrate-providing foods: • Sugars • Fruit • Dairy • Cereals/Grains • Legumes • Nuts and seeds • Beverages Glycaemic index and glycaemic load of the diet	• Obesity • Cardiovascular disease • Stroke • Diabetes/Insulin resistance • Cancer • Hypertension • Eye-health • Bone health • Dental health • Mental health	• 2002-2009 (to address potential changes in evidence since the 2003 edition)	Included: • Randomised controlled trials • Pseudorandomised controlled trials • Non-randomised experimental trials • Cohort studies • Case-control studies • Interrupted time series with control group • Historical control studies • Two or more single arm studies • Interrupted time series without parallel control group • Case series Excluded: • Cross-sectional studies • Letters/Editorials
EFSA 2010 (ref 12)	• Total and glycaemic carbohydrates • Sugars • Dietary fibre • Glycaemic index and glycaemic load	*Varies by exposure* • Body weight • Glucose tolerance and insulin sensitivity • Type 2 diabetes mellitus • Serum lipids • Blood pressure • Cardiovascular disease • Gastrointestinal function • Dental caries • Colorectal Cancer	Not specified (Based on listed references 1997-2009)	Not specified

German Nutrition Society (DGE) 2012 (ref 7)	• Total carbohydrates • Mono- and disaccharides (sugar), sugar-sweetened beverages • Polysaccharides • Dietary fibre/whole-grain products • Glycaemic index and glycaemic load	• Obesity • Type 2 diabetes mellitus • Dyslipoproteinaemia • Hypertension • Metabolic syndrome • Coronary heart disease • Cancer	<u>Initial search</u>: 1974-2009 <u>Updated search</u>: Meta-analyses until 2010	<u>Included</u>: • Randomised controlled trials, (duration ≥ 12 wks) • Prospective cohort studies <u>Excluded</u>: • Case-control studies • Cross-sectional studies • Non-analytic studies
Health Council of the **Netherlands**. Background Document Methodology for the evaluation of the evidence for the Dutch dietary guidelines 2015 (ref 18)	<u>Nutrients</u> • Digestible carbohydrates • Dietary fibre <u>Foods and beverages</u> (including the following main carbohydrate-providing foods): • Fruit • Cereals/cereal products • Legumes • Nuts and seeds • Dairy products • Potatoes • Beverages with added sugar	• Coronary heart disease • Stroke • Heart failure • Diabetes mellitus type 2 • Chronic obstructive pulmonary disease • Breast, colorectal and lung cancer • Dementia • Depression Additional consideration (based on RCTs only) • Blood pressure • LDL-cholesterol • Body weight	<u>Initial search</u> • Publication until 7/2014 <u>Updated search</u>: • Meta-analyses until 09/2015	Included: • Randomized controlled trials into incidence of/mortality from diseases, blood pressure, LDL-cholesterol or body weight • Cohort studies into associations with diseases (if food consumption assessed before disease diagnosis) RCT and cohort studies were evaluated separately • Pooled analyses • Meta-analyses • Systematic reviews <u>Excluded</u>: • Cross-sectional studies • Case-control studies (if exposure measured at/after outcome) • Experimental animal studies • In vitro research

Nordic Nutrition Recommendations (NNR) 2012 (ref 8)	• Total and glycaemic carbohydrates • Glycaemic index and glycaemic load • Added sugars • Dietary fibre	*Varies by exposure* • Body weight • Plasma lipids, glucose and insulin • Type 2 diabetes • Blood pressure • CVD • Laxation • Colonic fermentation • Dental caries • Pregnancy outcomes • Cancer	2000-2011/2012 [a]	Included: • Prospective observational studies (4 yrs follow-up) • Intervention studies (4 weeks duration) For narrative review on dietary fibre & glycaemic index: • Studies from Nordic countries only • Additional consideration of published international guidelines & reports
Scientific Advisory Committee on Nutrition SACN **(UK)** 2015 (ref 9)	• Total carbohydrates • Sugars and sugars-sweetened foods and beverages • Starch and starch-rich foods • Dietary fibre • Non-digestible oligosaccharides, resistant starch, polyols and polydextrose • Glycaemic index and glycaemic load	• Cardio-metabolic health: - cardiovascular disease - hyperlipdaemias and blood lipids - incident hypertension and blood pressure - vascular function - markers of inflammation - diabetes and glycaemia - obesity - energy intake and eating motivation • Colo-rectal health - colo-rectal cancer - irritable bowel syndrome - constipation • Oral health	Initial search: • Cardio-metabolic health 1990-12/2009 • Colo-rectal health until 11/2010 • Oral health until 01/2011 Updated search: until 06/2012	Included: • Randomised controlled trials (outcome-specific duration criteria) • Prospective cohort studies (with appropriate adjustments) Excluded: • Case-control studies • Cross-sectional studies • Ecological studies

US 2010 (ref 10)	Specific questions formulated for different carbohydrate exposures including the following: • Dietary fibre • Whole grain intake • Vegetable and fruits (not including juice) • Glycaemic index (GI) /glycaemic load (GL) • Sugar sweetened beverages (SSB) (in relation to energy intake and body weight only)	Specific questions formulated for different outcomes including the following: • Energy intake (for exposure SSB only) • Satiety • Measures of adiposity • Type 2 diabetes • Cardiovascular disease • Cardiovascular outcomes (for exposure vegetables and fruits only) • Cancer (for exposures GI/GL only)	Generally since 2004 (i.e. since the 2005 DGAC Report), except for: • Since 1995 for whole grains • Since 2000 for GI/GL • Since 1990 for SSB	Included: • Intervention trials • Prospective observational studies • Ecological studies • Systematic reviews • Meta-analyses Specific inclusion & exclusion criteria for specific research questions
US 2015 (ref 26)	• Added sugars intake	• Body weight/obesity • Type 2 diabetes • Dental Caries • Cardiovascular disease	• 2000-2014 (for systematic review on CVD)	Criteria used for systematic review on CVD Included: • Randomized trials • Non-randomized trials • Prospective cohort studies • Nested case-control studies Excluded: • Cross-sectional studies • Reviews, meta-analyses • uncontrolled studies • Before-and-after studies • Case-control studies • Ecological designs

WHO/FAO Expert Consultation 2003 (ref 14)	- Free sugars (frequency and amount) - Sugar-free chewing gum - Non-starch polysaccharides (dietary fibre) - Starch - Wholegrain cereals - Low glycaemic index foods	- Excess weight gain and obesity - Diabetes - Cardiovascular diseases - Cancer - Dental diseases - Osteoporosis	Not specified	Included: - Randomized controlled trials - Prospective cohort studies - Laboratory evidence (to support plausibility) - Case-control studies - Cross-sectional studies Excluded: - Not specified
WHO 2015 (ref 2)	- Total sugars - Free sugars - Added sugars % En from sugars - Sugar-sweetened beverages - Fruit juices	- Body weight or fatness gain measured by - weight change, BMI - body fatness and distribution - Dental caries (not erosion)	- Body weight [b]: Until 12/2011 - Dental caries [b]: 1950-11/2011	Included: - Controlled feeding studies (duration ≥ 8 wks) - Intervention studies (advisory/shopping type intervention) (duration ≥ 26 wks) - Cohort studies (adjusted and unadjusted estimates required)

[a] As specified in Sonestedt et al. 2012 (ref 39) and Øverby et al. 2013 (ref 40)
[b] See Te Morenga et al. 2012 (ref 30) and Moynihan et al. 2014 (ref 41)

Authority	Search Strategy	Quality assessment of individual included studies	Judging the Strength of the Evidence		Public consul-tation	Specific considerations for Implementation
		Y/N(scheme)	Type of review	Grading system	Y/N	

Australian National Health and Medical Research Council (NHMRC) 2013 (ref 4)	Databases: • CINAHL • MEDLINE • DARE • Cochrane • ScienceDirect • PsychLit • ERIC	Y (Level of evidence according to NHMRC scheme)	• Systematic reviews (for carbohydrate-specific exposure-outcome relations)	• Grade A (convincing association)/ • Grade B (probable association) / • Grade C (suggestive association) / • Grade D (weak evidence)	Y	Guideline development considered only evidence statements graded A, B or C according to evidence report External methodologist commissioned to double check evidence statements and grading. In addition to the *evidence report*, guideline development also considered these key sources of evidence: • Previous series of dietary guidelines and their supporting documentation • The Nutrient Reference Value Document • The Food Modelling System • Key authoritative government reports and additional literature Declaration of interest completed by all Working Committee members
EFSA 2010 (ref 12)	Not specified	N	• Narrative review	None	Y	--

German Nutrition Society (DGE)[7]	Database: PUBMED Strategy: • Database searching • Hand searching of reference lists of guidelines, reviews and original papers • References from literature search performed for WCRF report	Y (Level of evidence according to WHO scheme)	• Systematic review	• Convincing / • Probable / • Possible / • Insufficient (acc. to WHO scheme)	Y	• Considerations for implementation only cover exposure-outcome effects/associations with convincing or probable evidence • Formulation of dietary recommendations were outside the scope of the report
Health Council of the **Netherlands**. Background Document Methodology for the evaluation of the evidence for the Dutch dietary guidelines 2015 (ref 18)	Database: PUBMED Strategy: • database searching • references from other national and international guidelines	Limited quality check, using inclusion/exclusion criteria for studies to be considered only	• Systematic review of RCT's and cohort studies	Conclusions in four categories: 1: statement on effect/association + strength of evidence 2: effect / association unlikely 3: effect / association ambiguous 4: too few studies In deriving the guidelines for a healthy diet, the committee gives most weight to the effects and links with strong evidence.	Y	• The recommendations are formulated in terms of food products (instead of nutrients), It was considered that by doing this they connect better with both scientific developments as well as food choices that consumers may make.

	Database / Strategy	Quality	Type of review	Grading		Comments
Nordic Nutrition Recommendations (NNR) 2012 (ref 8)	Database [a]: PUBMED Strategy [a]: • Database searching	Y [a] (Quality Assessment tool addressing study design, population characteristics, exposure and outcome measure)	• Systematic reviews - sugar intake - macronutrients - food and weigh maintenance • Narrative reviews for dietary fibre and glycaemic index	• Convincing / • Probable / • Limited – suggestive / • Limited – no conclusion (modified from WCRF)	Y	• Generally recommendations justified for 'convincing' or 'probable' evidence • Considers whole-diet approach and current dietary practices • Done by expert group not involved in systematic review
Scientific Advisory Committee on Nutrition SACN (**UK**) 2015 (ref 9)	Database: • Medline • Pre-Medline • Embase • CAB Abstracts • BIOSIS • ISI Web of Science • Cochrane Library Strategy: • Database searching • Hand searching of selected journals • Hand searching of reference lists of systematic reviews and meta-analyses	Y (limited quality check)	• Meta-analysis (if 3 studies of similar design) including assessment of heterogeneity • Systematic review	• Adequate / • Moderate / • Limited (according to specifically developed scheme and expert judgement)	Y	• Role of SACN is the preparation of the report on the evidence • Considerations on public health policy and/or dietary management were outside the scope

US 2010 (ref 10)	According to Nutrition Evidence Library (NEL) systematic review methodology (collaboration between research librarian, NEL nutrition scientist staff and DGAC members) Databases: • PUBMED / MEDLINE • Cochrane Complemented by (outcome-dependent) • BIOSIS • CAB Abstracts • Food Science & Technology Abstracts • Scopus • Science Direct • Embase Strategy: • Database searching • Hand searching of references from primary and review articles	Y (NEL quality rating to indicate the extent to which the design and conduct of a study is shown to be protected from systematic bias, non-systematic bias, and inferential error)	• Systematic review for all outcome – exposure relations except for health benefits of dietary fibre (answered using 2002 DRI Report and 2008 ADA position paper)	2010 DGAC grading system considers five elements of relevance to scoring systematics 1) Quality (Scientific rigor and validity; Study design and execution), 2) Consistency (Consistency of findings across studies), 3) Quantity (Number of studies; Numbers per study), 4) Impact (Importance of studied outcomes; Magnitude of effect) and 5) Generalizability to population of interest. Levels of grading: • Strong / • Moderate / • Limited / • Expert opinion only / • Grade not assignable	Y	• 2010 DGAC prepares and submits reports of technical recommendations • 2010 DGAC responsibilities does not include translating recommendations into a policy or communications document

| US 2015 (ref 26) | According to Nutrition Evidence Library (NEL) systematic review methodology (for outcome CVD only)

Databases:
• PUBMED / MEDLINE
• Cochrane
• Embase
• BIOSIS
• CAB Abstracts
• Food Science & Technology Abstracts

Strategy:
• Database searching
• Hand searching | Y
• Risk of bias assessment: NEL Bias Assessment Tool

• AMSTAR Quality Assessment for systematic reviews or meta-analyses | • Systematic review only for CVD outcome
• Other outcomes: narrative review of WHO reviews and/or systematic reviews and meta-analyses | 2015 DGAC grading system considers five elements of relevance to scoring systematics 1) Quality (Scientific rigor and validity; Study design and execution), 2) Consistency (Consistency of findings across studies), 3) Quantity (Number of studies; Numbers per study), 4) Impact (Importance of studied outcomes; Magnitude of effect) and 5) Generalizability to population of interest based on risk of bias, consistency, quantity, impact and generalizability: Levels of grading:
• Strong /
• Moderate /
• Limited /
• Expert opinion only /
• Grade not assignable | Y | • 2015 DGAC prepared scientific report providing advice and recommendations to the Federal Government

• Based on 2015 DGAC report and public and Federal agency comments, HHS and USDA nutrition and health experts develop 2015-2020 guidelines |

WHO/FAO 2003 (ref 14)	Not specified	N	• Narrative review	• Convincing / • Probable / • Possible / • Insufficient (modified from WCRF)	N	Recommendations for policy and research considered: • Policy principles for promotion of healthy diets and physical activity; • Prerequisites for effective strategies (leadership for effective action, effective communication, functioning alliances and partnerships, enabling environments); • Strategic actions to promote healthy diets and physical activity.

| WHO 2015 (ref 2) | Databases [b]:
• Medline
• Embase
• Cochrane Database of Systematic Reviews
• Cochrane Central Register of Controlled Trials
• LILACS
• CNKI
• South African Department of Health databases
• PubMed
• Cumulative Index to Nursing and Allied Health Literature
• Scopus
• Web of Science

Strategy:
• Database searching
• Hand searching of reference lists of reviews and meta-analyses | Y [b]
(Cochrane criteria for RCT, own scheme for quality of cohort studies) | • Meta-analyses published in peer-reviewed journals
• GRADE Evidence profiles for
- Effect of free sugars intake reduction
- Effect of free sugars intake increase
- Effect of decreasing free sugars intake <10 %En/<5 %En | GRADE system:

Quality of evidence
• High /
• Moderate /
• Low /
• Very low | Y | Consensus on strength of recommendation considered:
• Desirable and undesirable effects of the recommendation
• Quality of the available evidence
• Values and preferences related to the recommendation in different settings
• Cost of the options available to public health officials and programme managers in different settings.

Declaration of interest completed by all members

External expert and stakeholder panel involved throughout the process |

[a] *As specified in Sonestedt et al. 2012 (ref 39) and Øverby et al. 2013 (ref 40)*
[b] *See Te Morenga et al. 2012 (ref 30) and Moynihan et al. 2014 (ref 41)*