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Developing food-based dietary recommendations in the UK

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The present paper provides an overview of the approach to developing food-based dietary recommendations in the UK. UK dietary recommendations are based on independent advice from the Scientific Advisory Committee on Nutrition (SACN). SACN's remit includes specific reference to the nutrient content of individual foods and advice on diet as a whole, including the definition of a balanced diet. SACN's approach is set out in its Framework for Evaluating Evidence and its assessments are supported by the data provided by the National Diet and Nutrition Survey. SACN's risk assessments have primarily focused on energy requirements, macro and micronutrients and/or the needs of specific population groups. However, dietary patterns or individual foods and health outcomes have been considered where sufficient evidence is available. An example of this is SACN's risk assessment on carbohydrates and health, which included consideration of evidence on sugar-sweetened beverages and the resulting dietary recommendations on free sugars and sugar-sweetened beverages led to a range of policies to reduce sugar intake in the UK, including the soft drinks industry levy. SACN has also recently published a position statement on processed foods and health. Government dietary advice is encapsulated in the UK's national food model, the Eatwell Guide. The Eatwell Guide shows the proportions in which different food groups should be consumed to have a well-balanced, healthier, more sustainable diet, to help meet nutrient requirements and reduce the risk of chronic disease. Any substantive change to government dietary advice is likely to lead to a review of the national food model.

Keywords: Food-based: Dietary recommendations: Scientific Advisory Committee on Nutrition

Improving population dietary intakes in the UK remains a focus for government given the critical contribution of diet to the burden of disease[1], impact on health services[2] and role in inequalities in health[3]. Most people do not meet dietary recommendations[4,5] and the prevalence of overweight and obesity remains high. In England, those born in the least deprived areas can expect to live 70·7 years in good health and a further 15·6 in poorer health. Those born in the most deprived areas can expect to live 51·9 years in good health and 26·4 years in poorer health[6].

Responsibility for food is split across a number of UK government departments including the Department of Health and Social Care, Department for Environment Food and Rural Affairs and Food Standards Agency. Diet and obesity currently sit in the Office for Health

Abbreviation: SACN, Scientific Advisory Committee on Nutrition.

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Improvement and Disparities in Department of Health and Social Care, having previously been in Public Health England, Department of Health and Social Care and Food Standards Agency. Responsibility for food is also a devolved issue so each of the four countries in the UK often has its own approach and priorities. Despite a rather complex and moveable system, there is a unified understanding on what the population should eat to keep them healthy, united through independent advice on nutrition and related health issues from the Scientific Advisory Committee on Nutrition (SACN).

SACN is a committee of the Office for Health Improvement and Disparities advising the four UK governments. SACN's risk assessments have primarily focused on energy requirements, macro and micronutrients and/or the needs of specific population groups. However, dietary patterns or individual foods and health outcomes have been considered where sufficient evidence is available[7].

The aim of the present paper is to provide an overview of the approach to developing food-based dietary recommendations in the UK.

Evidence and the policy cycle

A robust and broad ranging evidence base has been critical to determine and shape policies on diet and obesity and physical activity, allowing the development of policy that is well targeted and likely to achieve improved health outcomes – for example, incremental salt and sugar reduction[8,9], the rationale for the establishment of the soft drinks industry level ('sugar tax'[10]), implementation of restrictions on advertising[11,12] and the fortification of non-wholemeal wheat flour with folic acid[13]. It is also critical in order to robustly defend policy decisions; SACN's risk assessments were fundamental in Department of Health and Social Care defending a recent judicial review[14] on the implementation of the nutrient-profiling model in relation to breakfast cereals.

There are many interfaces between evidence production, policy development and implementation. Evidence has a role at all stages of the policy cycle – from identifying a risk, developing dietary recommendations, making the case for intervention and considering options for intervention/management to evaluation and surveillance[15,16]. Evidence developed or considered by policy makers may be directly requested by ministers, instigated by an independent advisory committee (such as SACN or the Committee on Toxicity) or other organisations (such as the National Institute for Health and Care Excellence or WHO), requested or recommended by devolved agencies, such as Food Standards Scotland, or other government departments, or be part of wider research initiatives. However, the type of evidence required will depend on the stage of the process, for example risk assessment or risk management, or the public health question being asked. Furthermore, policy development is not solely dependent on evidence, and even good evidence may not be enough to ensure that a policy is progressed – politics and delivery considerations are also critical. Controversial, politically unfavourable, or costly policies are likely to require much stronger evidence than those which are relatively cheap, easy to implement and generally considered a good idea (or at least uncontroversial) to the majority of people. A good example of a more complex situation is in relation to folic acid. Fig. 1 shows the multiple risk assessmentst, policy deliberations and public consultation required before a policy to mandate the fortification of non-wholemeal wheat flour with folic acid was announced in 2021[17–22].

Risk assessment by Scientific Advisory Committee on Nutrition

SACN has advised the UK government on nutrition-related matters since 2001, superseding the Committee on Medical Aspects of Food and Nutrition Policy[23]. SACN was established as part of a wider government approach to separating risk assessment from risk management (policy making) following the BSE crisis and subsequent Philips enquiry[24]. A clear conclusion from the enquiry was that expert scientific committees should be restricted to giving advice and should not be setting policy. Therefore, the development of government food and nutrition policy, while based on advice from SACN, is separate to the scientific assessment[7,25]. However, that is not to say there is not an iterative process and SACN can be asked to advise on possible practical solutions, as is currently the case in relation to its consideration of international approaches to vitamin D fortification[26] and plans for monitoring the forthcoming mandatory fortification of non-wholemeal wheat flour with folic acid. SACN's remit is to assess the risks and benefits of nutrients, dietary patterns, food or food components to health by evaluating scientific evidence and to make dietary recommendations for the UK population (including vulnerable and/or diverse groups) based on its assessment. SACN has a public health focus, therefore the treatment of disease is outside SACN's remit unless specifically requested. Consideration of issues related to alcohol, other than as a source of energy, is also outside SACN's remit[7].

All government scientific advisory committees must have clear governance and oversight in place alongside rigorous quality assurance/assessment process(es), which ensure the quality of the evidence produced and which is important for wider trust. The SACN Code of Practice[7] sets out how the committee reflects the guidelines governing scientific advisory committees, as set by the Government Office for Science Code of Practice for Scientific Advisory Committees[27]. Members are recruited in line with the public appointment process and their declarations of interest are published[28] with a historical record provided in SACN Annual Report[29]. Meeting minutes are published[30] and some meetings held in open session allowing members of the public to observe. Draft reports undergo consultation, and all responses are published. Representatives from the four UK governments can observe SACN but they must treat the discussions and papers shared in strict

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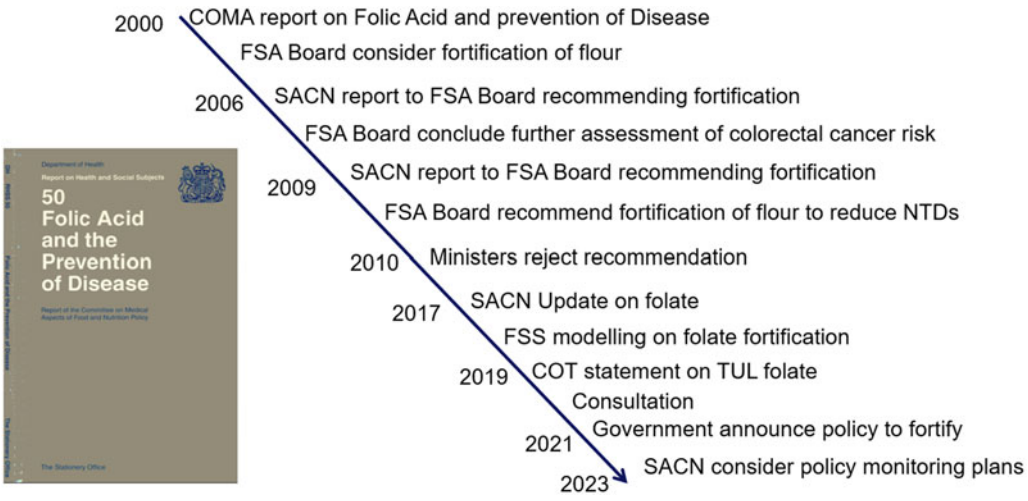

Fig. 1. Timeline to date on evidence to policy on mandatory fortification of non-wholemeal wheat flour with folic acid to help prevent neural tube defects (NTD)[17–22]. COMA, Committee on Medical Aspects of Food and Nutrition Policy; COT, Committee on Toxicity; FSA, Food Standards Agency; FSS, Food Standards Scotland; SACN, Scientific Advisory Committee on Nutrition; TUL, tolerable upper level.

confidence. SACN is supported by an Office for Health Improvement and Disparities secretariat who are able to undertake systematic reviews, technical report writing and translation into population dietary recommendations[7]. SACN sets its own work programme, predominantly through a horizon scan process[31] but also in response to ad hoc requests – for example from ministers, Chief Medical Officers, devolved administrations or policy teams. SACN's framework for the evaluation of evidence[25] ensures that its risk assessment processes are robust, reproducible and transparent. SACN generally undertakes systematic reviews of reviews and issues accompanying calls for evidence. Identified evidence is quality assessed and evidence is graded[25]. Draft reports are consulted on, and responses are published on the gov.uk webpages to all comments received[32].

National datasets, in particular the National Diet and Nutrition Survey, are also fundamental to SACN's risk assessment process, as well as policy development and monitoring (Box 1).

Food-based dietary recommendations

To date SACN's recommendations have predominantly focused on individual nutrients rather than foods or dietary patterns. Reflecting the available evidence, SACN has noted the complexities and weakness of current evidence base, which is largely observational and prone to residual confounding and reverse causality, and that published data may not be directly relevant to the UK population. For example, in relation to Mediterranean diets the committee have noted that there is no single Mediterranean diet (a multitude of scores and analytical approaches are applied), scores may not be validated for all age or population groups, findings tend to be heterogeneous and while the dietary components that are characteristic of Mediterranean dietary patterns broadly align with current UK healthy eating recommendations, as illustrated by the Eatwell Guide, there are few studies that compare these dietary patterns[44].

SACN (or SACN's predecessor, the Committee on Medical Aspects of Food and Nutrition Policy) has been able to make specific food-based recommendations in some instances:

(1) Recommending eating at least five portions of a variety of fruit and vegetables each day [45]
(2) Recommending two portions fish, one of which is oily, per week [46]

Box 1. Key sources of data on diet and obesity in the UK

Health Survey for England – survey data monitoring health trends in England, useful for monitoring changes in height, weight and BMI as well as physical activity[33].
National Child Measurement Programme – data collection measuring the height and weight of children in reception and year 6 in schools in England – large robust sample useful for monitoring (annually)[34].
National Diet and Nutrition Survey – survey data for assessing the diet, nutrient intake and nutritional status of the general population of the UK[35].
Diet and Nutrition Survey of infants and young children – survey data assessing diet and nutrient intake in the first 18 months of child's life (2011)[36].
Infant Feeding Survey – survey data looking at infant feeding practices including breast-feeding for infants up to 10 months old (2010)[37].
Kantar – data collection covering the nutritional content and price of products for a majority of the UK grocery market, also include sales data weighted to the UK[38].
Active lives – survey-level data on physical activity for children and adults as well as self-reported measurements of height[39].
Family Food Survey[40] – a survey that provides statistics on food purchases by type of food and includes estimates of nutrient content. Family resources survey[41] and Food Standards Agency tracker – food insecurity[42].
Sugar progress reports – progress across categories, by businesses and in top selling products compared to 2015[43].

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(3) Recommending that adults who regularly consume more than 90 g of red and processed meat daily reduce their consumption to no more than the population average of 70 g daily [47]
(4) Recommending that the consumption of sugars-sweetened beverages should be minimised in children and adults [48]

SACN's current and future work programme may also include dietary pattern and/or food-based recommendations – SACN's current work programme includes risk assessments on vitamin D fortification[26], plant-based drinks[49] and nutrition and maternal health[50]. SACN has also agreed to undertake further consideration of iodine and health, iron bioavailability and a stepwise approach to considering wholegrain, firstly agreeing definitions[31].

Processed foods

It is estimated that 50–60 % of UK dietary intakes may be classified as 'ultra-processed'[51,52]. The most commonly used definition – NOVA – includes foods that are clearly less healthy – such as sugar-sweetened drinks, confectionary and salty snacks – but also foods that would be encouraged as part of a healthier diet such as wholemeal sliced bread, canned beans or wholegrain breakfast cereals[53,54].

Given the increasing interest in this issue, SACN has published a position statement on processed foods and health[55]. SACN evaluated existing classifications of processed foods, including ultra-processed foods; evaluated the suitability of food processing definition(s) as a dietary exposure and considered the availability and quality of evidence considering food processing with health outcomes. SACN concluded that observed associations between higher consumption of (ultra-)processed foods and adverse health outcomes are concerning, however it is unclear to what extent these associations are explained by established relationships between nutritional factors and health outcomes. SACN have made a range of research recommendations to explore relationships between (ultra-)processed foods and health outcomes, based on a classification system that can reliably be applied in the UK. This is a complex issue and further scrutiny, with input from other specialisms such as food scientists and toxicologists, is likely to be required.

Translation of food and nutrient recommendations

In 1994, the Committee on Medical Aspects of Food and Nutrition Policy published dietary recommendations to prevent CVD that are reflective of the present recommendations on macronutrients[56]. To support implementation, the report included illustrative food-based examples utilising information on household food consumption at the time. However, what was intended as a helpful, illustrative translation of complex science was considered by the popular press as fastidious and the evidence-based basis of the nutrient recommendations were overlooked. More successfully, the Committee on Medical Aspects of Food and Nutrition Policy recommendations were translated into a visual food model, 'The Balance of Good Health' with segment sizes based upon a model average diet. The visuals were then updated for the Eatwell Plate, published in 2007, which used simpler visuals, a wider range of real foods and more intuitive names for the food groups[57,58].

The UK's current national food model, the Eatwell Guide was published in its current form in 2016, based on updated recommendations from SACN on free sugars and fibre. Alongside translation of nutrient recommendations, it also incorporates specific recommendations made by SACN on fruit and vegetable, red and processed meat and oily fish. Developed with an external reference group, it is based on modelled food patterns in the UK using data from the National Diet and Nutrition Survey, thereby reflecting realistic food choices. The Eatwell Guide underwent consumer testing and consultation. It is of note that the Eatwell Guide clearly shows that foods commonly considered 'ultra-processed', high in saturated fat, salt or sugar, should be eaten less often or in small amounts, and diets largely plant-based with fruit and vegetables and starchy, wholegrain carbohydrates being the major contributors to our meals[57,58].

Government implementation of dietary recommendations based on advice from SACN includes encouraging the food industry to reformulate foods high in sugars, salt and energy[8,9,59], the introduction of regulations restricting the placement of products high in saturated fat, salt or sugar in key selling locations in store and online[11,12], and the soft drinks industry levy[10]. The UK government's activities to translate dietary recommendations make use of the 2004/5 nutrient-profiling model which aims to identify products which are 'healthier options'[60]. The model was developed through rigorous scientific scrutiny and extensive consultation, including academic workshops and advice from SACN. A research report on the nutrient-profiling model was published in 2005 and following further consultation and scientific scrutiny, technical guidance was first published in 2009[61]. The nutrient-profiling model considers the balance of the ingredients and nutritional content of a food, using a scoring system in which points are allocated for certain ingredients or nutrients within a food or drink per 100 g. The model attempts to balance the contribution made by 'beneficial' nutrients (i.e. protein, fibre, fruit, vegetables and nuts), alongside the 'negative' contributions from nutrients for which intakes are higher than recommended (i.e. energy, saturated fat, sugar and salt).

The Government Buying Standards for Food and Catering Services nutrition standards, first introduced in 2011, implement SACN's dietary recommendations within public sector settings[62]. The standards are mandatory for all central government departments and their agencies, as well as prisons, the armed forces and National Health Services trusts and foundation trusts in England. School food-based standards to ensure children

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meet their nutritional requirements across the school day are also mandatory for maintained schools[63].

Way forward

Collaboration with other disciplines is an important way forward for risk assessment in nutrition science. SACN is currently undertaking a joint risk assessment with the Committee on Toxicity on plant-based drinks[49]. Such products are not nutritionally equivalent to cow's milk and are known to contain a number of toxicants, but for some population groups such as vegans they may be the only acceptable alternative to cow's milk[64,65]. The joint risk assessment requires consideration of both the nutritional benefits and toxicological risks and uses the BRAFO (Benefit Risk Analysis for Foods) framework[66], previously applied by SACN and the Committee on Toxicity on their assessment of the introduction of peanut and hens' egg to infant diets[67]. This type of 'risk-benefit' analysis may also be useful to employ for consideration of food or nutrient recommendations in other areas, for example in conjunction with another issue – such as sustainability or aspects of food processing.

Implementation of SACN's risk assessments on nutrition and health – 'risk management' – takes an evidence-based approach, as demonstrated by the production methods for the Eatwell Guide. These have generally made use of ad hoc expert groups and consultation with scientists working in the relevant fields. However there is no standing advisory committee for dietary risk management (as SACN provides for risk assessment) and this may be worth exploring in future.

Conclusion

Population food and nutrition recommendations in the UK are based on robust, independent and reproducible scrutiny of complex evidence, as are approaches to translation of recommendations to policy and practical implementation. Future food and nutrient recommendations can build on existing processes and may be furthered enhanced by collaboration with experts working in other disciplines such as food science or sustainability.

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Conflict of Interest

A. C. is employed by OHID. She is a member of AfN and a member of the Nutrition Society Advisory Council.

Authorship

The author had sole responsibility for all aspects of preparation of this paper.

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