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Report

National Diet and Nutrition Survey: Assigning mixed dishes to food groups in the nutrient databank

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ABSTRACT

The National Diet and Nutrition Survey (NDNS) gathers information on the dietary habits and nutritional status of the UK population aged 1.5 years upward. Mixed dishes, being a mixture of components with varying proportions, prove problematic for categorising and reporting consumption—unlike basic foods, which can be classified into specific food groups relatively easily. For both purchased and homemade mixed dishes, it is advantageous to have a consistent method for assigning dishes to appropriate food groups, while retaining continuity with previous NDNS surveys to enable investigation of trends over time. Historically two main methods have been used to classify mixed dishes in the NDNS databank: either grouping by meat or fish content, or grouping by the main food component. Neither method is entirely satisfactory. In this study, selected foods were tabulated by both methods to determine which approach should be used in future work. Neither method proved entirely satisfactory alone, and in order to maintain consistency and continuity for the main survey of the new NDNS rolling programme, it was decided to take into account elements from both methods and to place comparable recipes together in the same food groups. A varied approach encompassing food names, proportions of ingredients and case-by-case judgement is the most appropriate way to classify mixed food dishes in a nutrient databank.

1. Introduction

The National Diet and Nutrition Survey (NDNS), funded by the Food Standards Agency (FSA) and the Department of Health, gathers information on the dietary habits and nutritional status of the United Kingdom (UK) population. In reviewing the NDNS programme in 2002/2003, the FSA decided to move from a series of age specific surveys at timed intervals, to a rolling programme of continuous survey of all ages from 1.5 years upwards, now called the NDNS rolling programme (Ashwell et al., 2006). The results of the rolling programme survey will provide information on the current dietary habits and nutrient intakes of the UK population, as well as background data for dietary recommendations, nutrient profiling for food labelling and public policy messages from Government on healthy eating. The work of the rolling programme is being carried out by a consortium, comprising the National Centre for Social Research (NatCen), the collaborative Medical Research Council Human Nutrition Research Centre (MRC HNR) and the Joint Surveys team at University College London (UCL). The creation of the consortium and the assigning of resources for the rolling programme has allowed for a thorough examination of procedures and content of the NDNS food composition databank and enabled changes to be made in the way foods are categorised to better reflect the changing consumption patterns of UK consumers.

With the emergence of different family eating behaviours, including the advent of convenience meals in increasing number and variety, prepared mixed dishes are being increasingly consumed by British consumers (Griffin and Boyle, 1996). Between 2002 and 2006 the United Kingdom has seen a growth in the purchase of "ready meals", where consumers buy a "ready-to-cook" mixture of ingredients placed together as a complete meal (Huxley, 2003; DEFRA, 2008). Mixed dishes are, by their nature, a mixture of components with varying proportions and cooking methods that are determined to a large degree by individual eating preferences. Basic foods listed within a food composition databank can be easily classified into specific food groups, for example, cheese, whole milk and confectionery, but with mixed dishes (purchased or homemade) such groupings can prove problematic. Within a food composition databank it is important to classify mixed dishes accurately to enable analysis at food group level. At the same time, it is important to know the basic food components of mixed dishes in order to obtain better estimates of consumption for comparison with recommendations. It is a common feature of NDNS and other dietary surveys to provide information on the contribution of individual food groups and food sources to specific

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nutrients. These data may then be used to develop food-based guidelines for populations or population groups to address nutritional needs. In this context it is essential that mixed dishes are assigned to appropriate food groups.

The purpose of the current project was to review the existing methods for assigning mixed dishes to food groups in the NDNS food composition databank and to develop a consistent approach to assign mixed dishes to appropriate food groups for the start of the main survey of the new NDNS rolling programme in 2008, while retaining basic concepts of previous NDNS surveys to enable investigation of trends over time.

2. Materials and methods

The dietary intakes of NDNS respondents are calculated from food diaries, using a specially adapted food composition databank (FCDB), which holds data for over 4000 foods. The NDB (Smithers, 1993) was originally developed for the Ministry of Agriculture, Fisheries and Food (MAFF) for the Dietary and Nutritional Survey of British Adults, carried out in 1986/1987(Gregory et al., 1990). It was then updated for the NDNS of children aged 1.5–4.5 years (Gregory et al., 1995), people aged 65 years and above (Smithers et al., 1998), and young people aged 4–18 years (Gregory et al., 2000). Responsibility for the FCDB was transferred from MAFF to the FSA on the latter's establishment in April 2000. Further revisions and updates were carried out by the Agency for the NDNS of adults aged 19–64 years (Henderson et al., 2002) and for the Low Income Diet and Nutrition Survey (LIDNS) (Nelson et al., 2007) with many nutrient values updated and new codes added to accommodate new products that had become available. Each food on the databank has values assigned for 58 nutrients, based on data from the FSA's rolling programme of nutrient analysis of foods, published as the McCance and Widdowson's The Composition of Foods series (Food Standards Agency, 2002), together with manufacturers data where applicable. The structure of food grouping within the NDB is shown in Fig. 1.

An individual food code is assigned to each mixed dish within the FCDB, which is derived from two or more 'ingredient foods' with their respective food codes. The data on the 'ingredient foods' are lost when reported at the mixed dish level. It is expected that, due to the structure of food groups within this FCDB, the greatest inaccuracy of reporting intake data at subsidiary food group level will be apparent within mixed dishes that contain proportions of meat or fish as well as vegetables and/or cereals, as the FCDB does not contain food groups for pasta and meat dishes or meat and vegetable dishes, for example. Although foods such as vegetable dishes, puddings, cakes and pastries are strictly mixed dishes, in that they contain more than two ingredients, the nature of the food group levels in the NDB means that they will usually only fall into one subsidiary food group whereas most meat or fish dishes can also contain proportions of vegetable and cereal ingredients resulting in unclear classification.

The total number of food codes in the databank ($n = 4870$) is made up of 2549 codes containing meat or fish, with percentage contributions ranging from 1 to 99% and recipe components on a scale from 2 to 21 items. The remaining 2321 food codes are mainly basic food items such as bread, milk and cheese but also include foods such as vegetable dishes, puddings, cakes and pastries and it

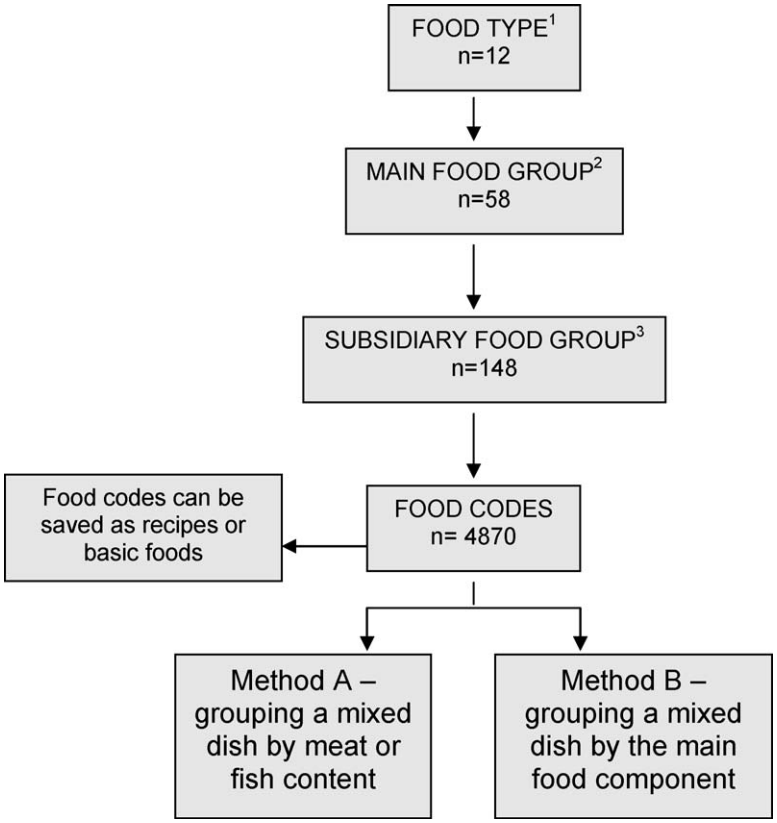

Fig. 1. Food group hierarchy in the UK National Diet and Nutrition Survey food composition databank. [1]Food Types are: Cereals and cereal products; Drinks; Eggs and egg dishes; Fats; Fish and fish dishes; Fruit, Meat and meat products; Milk and milk products; Miscellaneous; Other; Sugars, preserves and confectionery; Vegetables, potatoes and salads. [2]An example of a main food group is 'Beef, veal and dishes'. [3]Subsidiary food groups contained within the main food group of 'Beef, veal and dishes' are: 'Manufactured beef products including ready meals' and 'Other beef and veal including homemade recipe dishes'.