Improvement of an on-line dietary analysis database for use in large-scale dietary surveys

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Introduction

Food Frequency Questionnaires (FFQ) are a dietary assessment tool used extensively in diet and health studies. They are used to assess the frequency and types/quantities of foods consumed by a population over fixed period of time. This project involved the improvement of an on-line dietary database to generate a new weighted estimate of portion sizes and nutrient composition.

An old database, taken from Family Food and Health Project (FFHP) was revised to make a new database using data from the most recent National Diet and Nutrition Survey (NDNS) rolling programme. Comparing new and old databases shows whether portion sizes have changed over the past 20 years.

Project Aims

To generate a new on-line database of food portion sizes and nutrient composition of food items in an existing FFQ.

To quantify the differences in the portion sizes of difference food groups over the past 20 years and the impact on nutrient intake.

Methods – 1

Table 1: Differences between the old and new data

Old data- Family Food and Health Project (FFHP)	**New data- National Diet and Nutrition Survey (NDNS) Rolling Programme**
Designed to increase intervention of low-fat starchy foods	Aimed to provide quantitative data on the types/quantities of foods consumed by a representative UK population
Only participants within Newcastle upon Tyne n=169 families; 589 individuals (303 adults at 4 time points) – baseline (T_0), 3 months (T_1), 6 months (T_2) and 18 months (T_3).	Consists of the general UK population, which is nationally representative

Methods – 2

The data were collected between 1998 and 2000.

Four years of data collection from 2008/09 to 2011/12 – Replace previous reports, providing a larger sample size.

Three intervention groups – A) education only, B) 'cook and eat 'sessions only, C) included personalised goal setting, 'cook and eat' and education. Four-day food diary.

No intervention. Four-day food diary – portion sizes estimated using household measures/weights from labels.

Results

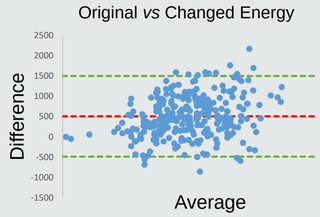

Figure 1: Differences against average: comparison between original and changed energy intakes (KCal/d)

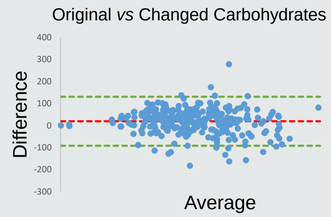

Figure 2: Differences against average: comparison between original and changed carbohydrates intakes (g/d)

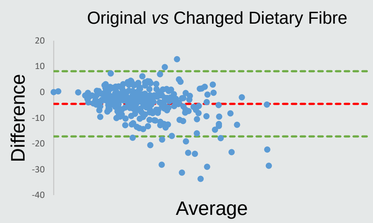

Figure 3: Differences against average: comparison between original and changed dietary fibre intakes (g/d)

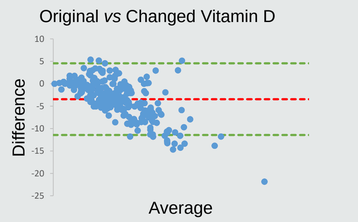

Figure 4: Differences against average: comparison between original and changed vitamin D intakes (µg/d)

Figure 1-4: Examples of nutrient intake calculated with the old and new databases. The red dotted line represents the mean difference (average bias) with green dotted lines representing ± 2 standard deviations (95% limits of agreement)

Discussion

Figure 1 shows that the average difference in estimates of energy intake was 500 KCal/day which increased slightly as intake increased. This suggests that portion sizes are higher resulting in apparently higher energy intakes. This confirms recent suggestions that people are eating more than 20 years ago, a possible contributor to the rise in obesity.

Figure 2 shows that the average difference for Carbohydrate was close to 0, which suggests that there were smaller differences in the portion sizes of carbohydrate-rich foods between the old and new data.

Figures 3 and 4 show that mean differences for Dietary Fibre and Vitamin D intake were below 0, with a larger negative difference at higher intakes. This suggests that portion sizes of foods high in these nutrients are smaller in the new database compared with the old database.

Conclusion

Updating the portion sizes in the on-line database resulted in mixed effects on apparent nutrient intake. Overall portion sizes were greater in the new database but this was not true for all foods. The biggest impact was in energy-rich (generally high fat) foods suggesting that the increase in portion sizes may contribute to the rise in obesity.

References & Acknowledgments

Curtis, PJ, Adamson, AJ & Mathers, JC (2012). Effects on nutrient intake of a family-based intervention to promote increased consumption of low-fat starchy foods through education, cooking skills and personalized goal setting: The Family Food and Health Project. *British Journal of Nutrition*, 107, 1833-1844.

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