



Developing MenuCal[©] - a system to enable food businesses to put calories on their menus

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Consumers in Ireland strongly support calorie menu labelling as a supportive strategy for healthy eating and weight control⁽¹⁾. However, as most of Ireland's food service businesses are small-to-medium sized enterprises, this sector needs to be supported to do the necessary calorie calculations themselves if calorie menu labelling is to be sustainable in Ireland⁽¹⁾. The Food Safety Authority of Ireland developed MenuCal[©] - a free on-line calorie calculator designed for food service personnel, who do not have a background in nutritional science. This study determines the necessary components required to ensure MenuCal[©] is fit for purpose.

A food composition database comprising only of foods necessary for recipe use, was developed from data appropriate for Ireland⁽²⁾. Thus foods for special uses (e.g. baby foods), supplements, branded foods and composite dishes were excluded. Energy was made available in calorie or joule units but all other nutrition information was suppressed. A user-friendly on-line interface was constructed using modern software technologies provided by Dovetail Technologies Ltd. The software was constructed to enable selection of foods in metric, imperial and average portion size⁽³⁾ quantities. Three phases of testing MenuCal were conducted with end-users (catering students, food service business staff and managers) to identify necessary improvements, which were incorporated before each subsequent testing phase. Ease of use and accuracy of calorie values obtained by these non-trained end-users was assessed during testing⁽⁴⁾. Additional average portion sizes were developed where necessary. Refinements to searching for, and quantifying, foods were incorporated as an integrated system of 'chef's tips, prompts and guidance on portion sizes' which were linked to relevant foods. Following the final phase of testing, an advanced function was developed to estimate oil/fat absorption during frying for calculation of calories for fried dishes⁽⁵⁾. Finally an interactive on-line training module was developed based on all findings during testing - including errors, inaccuracies and feedback from testers. This training module was embedded into MenuCal to provide support to users.

The MenuCal food composition database is comprised of 2515 foods. Average portion sizes that were available ($n=173$)⁽³⁾, and developed specifically for MenuCal ($n=54$), were matched to 630 of these foods. A system of 170 'chef's tips, prompts and guidance on portion sizes' were linked to relevant foods. Testing showed acceptable levels of accuracy was achieved by end-users of MenuCal compared with nutritionists testing the same recipes⁽⁴⁾. Furthermore, over 84% of end-user testers described MenuCal as 'easy to use' and they 'would use it again'⁽⁴⁾. The final phase of testing revealed the need to develop the advanced function to calculate calories for fried foods. A validation study of this advanced function showed acceptable accuracy ($\pm 30\%$ tolerance) was achieved for most fried foods tested⁽⁵⁾.

In conclusion, MenuCal is a unique and innovative tool designed to enable sustainable calorie menu labelling by small to medium-size food service enterprises across Ireland. The iterative testing by end-users and subsequent development of the MenuCal system indicates it is 'fit for purpose'. However, only real-world use and evaluation will determine this.

1. Food Safety Authority of Ireland (2012). Calories on Menus in Ireland – Report on a national consultation at: <http://www.fsai.ie/WorkArea/DownloadAsset.aspx?id=11419>
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3. Crawley H. (1998) Food portion sizes. London: Her Majesty's Stationery Office.
4. Kelly SM, Kerr MA, McCaffrey TA, et al. (2014) *Proc Nut Soc*; (Submitted).
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