



Defining Portion Sizes for Breakfast Cereals

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Nutrition Information (expressed per 100 g of food) helps consumers compare products, but additional information 'per portion' helps consumers to estimate the content of their serving. In Europe, breakfast cereal companies now routinely use a set of standard portion sizes developed in 2008 by their trade association CEEREAL, and these have recently been reviewed to ensure that they are still realistic and reasonable.

As part of this process, we compared data from national dietary surveys across Europe that provided median amounts of breakfast cereals on consuming days, as proxy for portion sizes. In addition, we compared data from the Irish Food Portion Sizes database, which used a more precise method. Estimated portion sizes varied widely, but the average was within the range of the current standard serving size used by CEEREAL (30-45 g) although towards the upper end of this range. Weighed data from Ireland tended to give higher values for muesli.

Standardised portion sizes give a useful guideline for consumers, without being overly prescriptive. They represent typical amounts consumed by adults, although teenagers and active adults may consume more and young children may need less than the quoted portion. Consumers would benefit if retailers, manufacturers, health professionals and non-government organisations used a consistent set of portion sizes in communicating dietary advice. Tools could be developed to help consumers estimate their portion size. Further work is desirable to obtain better estimates of portion sizes by secondary analysis, to explore whether observed differences between countries are real or attributable to methodology, and to develop portion sizes for different age groups.

Why is it important to have portion sizes?

Nutrition information on pack (per 100g of product) helps the consumer to compare different kinds of foodstuffs. However, for consumers to relate this to what they might

eat requires reliable data on typical portion sizes. A portion size is defined as the amount of food an individual intends to consume in one sitting. However, studies have called for greater consistency in the portion sizes communicated to the public.¹

The European Breakfast Cereal Association (CEEREAL) acts as the representative of the breakfast cereal and oat milling industries in the EU and its institutions, industries and consumers. In 2008, CEEREAL developed harmonised portion sizes for member companies to use in nutrition communications to consumers. Standard portion sizes were established to provide information that was both consistent and in line with what people consume and a healthy balanced diet. These portion sizes refer to the weight of ready-to-eat cereals, excluding added milk. Porridge is excluded. This article describes the rationale and method used in establishing harmonised portion sizes. Further details and an animation explaining cereal portion sizes is available on the CEEREAL website at: www.ceereal.eu.

Legal requirements for labelling

Although it is voluntary, rather than mandatory, to provide information on a 'per portion' basis, EU Regulation 1169/2011² requires that where this is given the following conditions must be fulfilled:

1. Portions must be easily recognisable by the consumer
2. The portion used must be quantified on the label
3. The number of portions or units contained in the package must be stated.

In keeping with these regulations, CEEREAL periodically reviews the basis for portion sizes to ensure these are realistic and reasonable. We were recently commissioned to update the portion size rationale using available data on cereal consumption in nine member states.

Historical background to portion sizes

The first reference to a portion size for breakfast cereal (which was 1 oz, or 28 g) appeared on packs in the 1940s. It is not certain whether this value merely reflected the unit of measurement at the time or was based on catering portions or rations. However, history alone is not a compelling reason for retaining the same values. Instead, portion sizes should ideally be based on accurate consumption data from dietary surveys of free-living individuals who are representative of their country and group. They also need to reflect the diversity of products on the market.

Current rationale for portion sizes

The majority of people decide their serving size from the volume in the bowl, rather than by weight. However, a cup of granola or muesli weighs more than a cup of flakes or puffed cereal, and so CEEREAL portion sizes take this into account by suggesting different portion sizes dependent on the type or category of cereal. Heavier cereal products include granola, muesli and cereal with 'inclusions', such as fruit and nuts, and these are allocated a larger portion size by weight of 40 g or 45 g. The less dense products, which include flakes and popped cereal, are allocated a smaller portion size by weight (30 g).

Data evaluation for portion sizes

For the latest update we used data from nine countries with reliable dietary surveys of individuals: Belgium, Denmark, France, Germany, Ireland, Italy, UK, Netherlands and Sweden. Together these are broadly representative of the dietary habits across Europe. These data are available as part of the EFSA Comprehensive European Food Consumption Database³ and were conducted between 2004 and 2011. All studies were nationally representative, covering all regions and sociodemographic groups. In compiling the EFSA database, a uniform classification system was used for the foods and age groups. Only data collected through actual food records, or dietary recalls of 24-48 hours, are included in the Comprehensive Database; food frequency questionnaires were not included, which provide less reliable data on amounts. However, there were differences in methodology between surveys (e.g. in how amounts were estimated) and, therefore, caution is required in comparing results between countries.

Dietary surveys normally report mean consumption (g/d) of each food or food group, averaged over consumers and non-consumers for the period of the survey. This is of little use in determining portion sizes. Even the mean among consumers only is not always helpful because the definition of consumer varies accordingly to the timescale of the survey. However, for breakfast cereals, which are normally only eaten once a day, data on acute consumption by consumers on consuming days acts as proxy for portion sizes. The best source is data on meal occasions, but this is only available by analysing individual records.

“The majority of people decide their serving size from the volume in the bowl, rather than by weight.”

The median amount is the preferred measure,⁴ rather than the mean, which tends to be distorted by high consumers.

Figure 1 shows median consumption of cereals with different densities by adult consumers in nine European states. Although there is considerable variation, the most common value lies around 40 g.

Differences between countries may reflect genuine differences in cereal use (for example as an accompaniment to fruit or yogurt rather than as the main item). However, there were some differences in assessment methods, although all were validated. For example, data for Ireland were mostly obtained by weighing, whereas other countries used non-weighed methods, such as household measures or photographs, to assign portion weights.

Cereal portion sizes by age group

The standard portion sizes quoted on pack are broadly based on what an average adult might consume. However in practice men usually eat more than women, while adolescents consume as much as adults (or more), and younger children need (and normally eat) less than adults.

The EFSA database does not (yet) distinguish between males and females, but it does provide data by age group, including adolescents and younger children. Typically, median consumption among adolescents was around 40-50 g across all products and countries, while younger children consumed around 25-40 g on consuming days. As for adults, values for muesli/granola-type cereals tended to be higher than for other varieties, although this was not always the case.

As previously mentioned, the Irish Food Portion Sizes Database⁵ allows a more precise estimation of portion sizes. Data are given by age group and also for men and women separately, and was calculated from four large, nationally-representative food consumption surveys conducted since 2003. Median portion sizes for ready-to-eat cereal (RTEC), excluding muesli, were 32 g, 40 g and 45 g (for 5-8 years, 9-12 years and 13-17 years) and 42 g for adults (18-64 years old). Adult men had higher values (median 49 g) than adult women (39 g).

Portion sizes for muesli were larger than for RTEC (75 g among adults, 85 g among teens) but muesli was not commonly consumed. Hence, the composite portion size for all breakfast cereals was estimated at 32 g/40 g/46 g for 5-8 years, 9-12 years

and 13-17 years respectively, and 45 g for adults, as shown in Figure 2.

Other uses of portion size data

In addition to providing information on packaged foods for consumers, portion sizes have other important uses. They help manufacturers to assess appropriate levels of fortification nutrients in order to provide a certain proportion of the reference nutrient intake (RNI) per serving. They may be used to validate and calibrate questionnaires used in epidemiological studies, and to develop food-based guidelines. Scientific studies have also examined whether portion sizes have increased over recent decades. This has been observed for some savoury and fast foods but not for breakfast cereals.

Conclusions

Breakfast cereals provide a light but nutrient-dense meal containing fibre, vitamins and minerals essential to a healthy diet, and most health professionals are seeking to encourage regular consumption of high fibre and wholegrain breakfast cereals in order to boost fibre intakes. In most European counties, with the exception of Ireland, less than half the population consumes breakfast cereal on any one day.

From the available data reviewed here, median portion sizes for adults generally fall in the range of the current CEEREAL standardised sizes (30-45 g), although towards the upper end of this range, especially for denser cereals.

Specific recommendations for research:

1. Further work could obtain better estimates of portion sizes by secondary analysis
 2. Differences between countries could be further explored to determine if they are real, or attributable to survey methods
 3. Portion sizes (or a range of portion sizes based on 25th and 75th percentiles) could be developed for children and adolescents, and men and women
 4. Standardised portion sizes could be agreed between manufacturers and retailers and adopted by non-governmental organisations and healthcare practitioners
 5. Portion size information could be given in terms of household measures (for example, heaped tablespoons) or plastic spoons provided in packs
 6. Serving suggestions could include portions of fruit and dairy products to enhance nutritional balance and variety.
- Finally, we suggest that research is conducted to understand the impact of cereal portion sizes on health and the impact of portion size information on consumer behaviour.

Figure 1: Median Portion Size of Cereals Consumed by Adults in European Countries

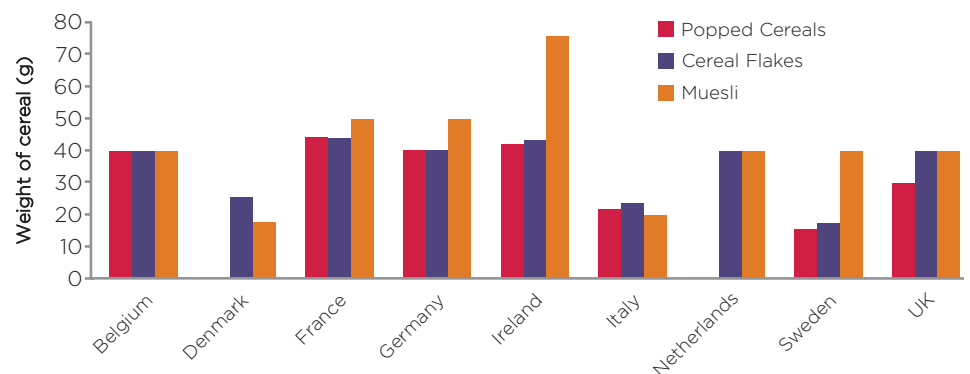
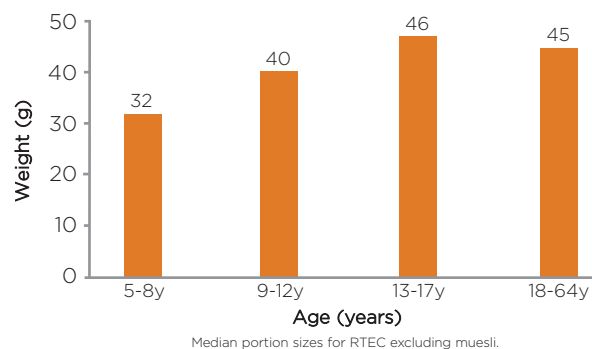


Figure 2: Median Portion Size (g) of Breakfast Cereals Consumed by Irish Adults and Children



References: 1. Lewis H, Ahern A, Jebb S (2012). How much should I eat? A comparison of suggested portion sizes in the UK. *Public Health Nutrition*; 15(11): 2110-2117. 2. Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers. Accessed online: <http://data.europa.eu/eli/reg/2011/1169/oj> (August 2016). 3. EFSA (2011). Comprehensive European Food Consumption Database. Accessed online: www.efsa.europa.eu/en/food-consumption/comprehensive-database (August 2016). 4. Lyons J, Walton J, Flynn A (2013). Development of an online database of typical food portion sizes in Irish population groups. *J Nutr Sci*; 2: e25. 5. Lyons J, Giltinan M (2013). The Irish Food Portion Sizes Database, First Edition. Accessed online: www.iuna.net/wp-content/uploads/2013/09/Irish-Food-Portion-Sizes-Database.pdf (August 2016).