

## **Portion, package or tableware size for changing selection and consumption of food, alcohol and tobacco: a Cochrane systematic review**

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### **What is known already:**

- Overconsumption of food, and alcohol and tobacco use increase the risks of heart disease, diabetes, and many cancers, which are among the leading causes of ill health and premature death.
- Until now, the extent to which this overconsumption might be attributed to ‘overserving’ of larger-sized portions or packages of food and drink, or to packs containing larger numbers of cigarettes, has not been known.
- The main objective of this Cochrane review was to assess the effects of interventions that involve manipulation and comparison of different sizes or shapes of a portion, package, individual unit or item of tableware on selection or consumption of food, alcohol or tobacco products, in adults and children.
- By combining results from all high quality studies that have investigated portion, package and tableware size effects, this systematic review aimed to provide more precise estimates of the sizes of the effects than have been available to date.

### **What this systematic review adds:**

- 72 studies met the eligibility criteria for the review: 69 on food or non-alcoholic drinks, three on tobacco and none on alcohol.
- This review provides the most conclusive evidence to date that people consistently consume more food and drink when offered larger-sized portions, packages or tableware than when offered smaller-sized versions, based on combining results from 61 studies (6,711 participants).
- The size of this effect suggests that, if sustained reductions in exposure to large sizes could be achieved across the whole diet, this could reduce average daily energy consumed from food by 10% to 17% among adults in the UK (equivalent of up to 290 kcals per day) or by 18% to 30% among US adults (equivalent of up to 547 kcals per day)<sup>1</sup>.
- However, it is likely that large reductions in portion size would be needed to achieve the changes in food consumption of the magnitude suggested by these results. Also, the review does not establish conclusively whether reducing portions at the smaller end of the size range can be as effective in reducing food consumption as reductions at the larger end of the range. Critically, there is also a current lack of evidence to establish whether meaningful short-term changes in the quantities of food people consume are likely to translate into sustained or meaningful reductions in consumption over the longer-term.
- We did not find evidence that the size of this effect varied substantively between men and women, nor by people’s body mass index, susceptibility to hunger, or tendency to consciously control their eating behaviour. If replicated by further research, these findings would:

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<sup>1</sup> When the summary effect size we estimated is re-expressed, for illustrative purposes, using the more familiar metric of the ‘equivalent % change from baseline in daily energy intake from food’, % changes are larger among US adults than among UK adults because average (mean) baseline daily energy intake from food (kcals) is higher among US adults, with a larger standard deviation (i.e. the same estimated effect size applies to both the UK and the USA).

- add credence to the claim that people are susceptible to environmental influences on food consumption that operate independently of individual characteristics that are often portrayed as the main drivers of overconsumption; and
- confirm the potential for effective interventions targeting portion, package and tableware size to reduce consumption among a broad range of people.
- We rated the overall quality of the evidence for this effect as moderate. This reflects confidence in our estimate of the size of this effect, taking into account all relevant factors including (but not limited to) concern about incomplete or unclear reporting of methods and procedures in many primary study reports (study limitations).

### **Implications for policy**

We are unable to highlight any clear implications of the findings of this review for alcohol or tobacco policy because there is not enough evidence in these areas. The policy implications of the findings of this review, described below, therefore apply exclusively to food (including non-alcoholic drinks):

- Policies and practices that reduce exposure to larger sized portions, packages, individual units and tableware can contribute to meaningful reductions in the quantities of food (including non-alcoholic beverages) that people select and consume, helping us to avoid overconsumption.
- The principal findings of this review would support actions targeting the physical environment (in public sector and commercial sector settings) to reduce the size, availability and appeal of larger sizes, that include:
  - Reducing the default serving size for energy dense foods and drinks where these are large in absolute terms, or providing smaller crockery, cutlery and glasses for use in their consumption;
  - Reducing the availability of larger portion sizes; and
  - Demarcating single portion sizes in packaging through wrapping or a visual cue.
- Other potential actions targeting the economic environment (public and commercial sectors) could include:
  - Restricting pricing practices whereby larger portion and package sizes cost less in relative (and sometimes absolute) monetary terms than smaller sizes and thus offer greater value for money to consumers; and
  - Restricting price promotions on larger portion and package sizes.
- Some of the highlighted actions are likely to require regulation or legislation, enabled by active demand from the public for changes to the food environment.
- With the exception of directly controlling the portion sizes of the foods people consume, assessment of the effectiveness of these and other specific intervention strategies was beyond the scope of this review.
- There is therefore a need to strengthen the evidence base around the effectiveness of specific actions to reduce the size, availability and appeal of larger-sized portions, packages and tableware.

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