CHAPTER 4

From the point-of-purchase perspective: A qualitative study of the feasibility of interventions aimed at portion size

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ABSTRACT

Objectives: Food portion sizes might be a promising starting point for interventions targeting obesity. The purpose of this qualitative study was to assess how representatives of point-of-purchase settings perceived the feasibility of interventions aimed at portion size.

Methods: Semi-structured interviews were conducted with 22 representatives of various point-of-purchase settings. Constructs derived from the Diffusion Of Innovations Theory were incorporated into the interview guide. Each interview was recorded and transcribed verbatim. Data were coded and analyzed with Atlas.ti 5.2 using the framework approach.

Results: According to the participants, offering a larger variety of portion sizes had the most relative advantages, and reducing portions was the most disadvantageous. The participants also considered portion size reduction and linear pricing of portion sizes to be risky. Lastly, a larger variety of portion sizes, pricing strategies and portion size labeling were seen as the most complex interventions. In general, participants considered offering a larger variety of portion sizes, portion size labeling and, to a lesser extent, pricing strategies with respect to portion sizes as most feasible to implement.

Conclusions: Interventions aimed at portion size were seen as innovative by most participants. Developing adequate communication strategies about portion size interventions with both decision-makers in point-of-purchase settings and the general public is crucial for successful implementation.

Key words: Obesity; Food portion size; Intervention
BACKGROUND

Overweight and obesity prevalence is drastically increasing worldwide [1]. Overweight is a major risk factor for chronic diseases such as cardiovascular diseases or diabetes mellitus type 2. Overweight and obesity have a considerable impact on individual lives, in addition to having a significant societal and economic impact [2].

The obesogenic environment in which we live is making a considerable contribution to the population’s weight gain [3]. One of the main factors underlying the current obesity epidemic is an environment that promotes excessive food intake and discourages physical activity [4]. Glanz et al. have identified the consumer nutrition environment as a high research priority in combating the obesity epidemic [5].

One of the key obesogenic factors within our nutrition environment is food portion sizes [4, 6-8]. In parallel to the dramatic rise in obesity prevalence, portion sizes have increased considerably in both the US and Europe in recent decades [9-12].

Large portion sizes of energy-dense food are problematic because they may lead to an increased food intake [13]. There is empirical evidence to support the position that large portion sizes enhance consumption in the case of single-meal settings with amorphous food [14, 15], pre-packaged food [16], pre-portioned units [17], and even food with a relatively unfavorable perceived taste [18]. In addition to single-meal settings, recent research has shown that chronic exposure to large portion size meals can lead to a sustained increased energy intake [19, 20]. The tendency to eat more when served larger portions has been found regardless of subject characteristics such as sex, Body Mass Index, or tendency towards dietary restraint or disinhibition. One of the explanations for an increased consumption of large portions compared to small portions, is the notion of value-for-money; a relative low price-per-portion stimulates purchase and subsequently leads to an increased consumption of a given product [13].

Given this background, food portion size seems to be a valid starting point for the development of environmental interventions directed at the prevention and treatment of obesity. In addition, research has indicated that consumers are aware that portion sizes have increased, and that they are open towards interventions aimed at portion sizes on condition.
that such measures are not overly patronizing and that value-for-money is guaranteed. Consumers have shown specifically positive attitudes towards a larger variety of portion sizes, combined with pricing strategies and labeling [21].

Although it is assumed that interventions aimed at portion size can be highly effective, only a few intervention studies aimed at portion size have been carried out. Before assessing an intervention’s effectiveness, it is important to consider how feasible it is to implement and how point-of-purchase settings (i.e. settings where food is provided and/or sold, such as supermarkets, worksite cafeterias and fast-food restaurants) can be influenced to adopt an intervention [22].

Interventions aimed at portion size can be regarded as innovations. According to Rogers [23], an innovation is an idea, practice, or object that is perceived as new by a unit of adoption (i.e. point-of-purchase settings in this case). The Diffusion of Innovations Theory (DOIT) states that the adoption of an innovation is a challenge, and is partly dependent on the attributes of an innovation [23]. Within the scope of this study, relative advantage, risks, complexity and communicability were identified as relevant innovation attributes (see Table 4.1 for an outline of these attributes). The purpose of this qualitative study is to assess how representatives of point-of-purchase settings perceive the DOIT attributes of interventions aimed at portion size.

**Table 4.1 DOIT variables included in the study**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
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<tbody>
<tr>
<td>Relative advantage</td>
<td>The degree to which an innovation is perceived as better than the idea it supersedes</td>
</tr>
<tr>
<td>Risks</td>
<td>The degree to which an innovation can be adopted/implemented with minimal risk</td>
</tr>
<tr>
<td>Complexity</td>
<td>The degree to which an innovation is perceived as difficult to understand and use</td>
</tr>
<tr>
<td>Communicability</td>
<td>The degree to which an innovation can clearly and easily be understood</td>
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METHODS

Participants and recruitment procedure
Semi-structured interviews were conducted with a purposive sample consisting of 22 representatives of a diverse group of Dutch point-of-purchase settings. Eight participants represented a worksite cafeteria organization, five participants spoke on behalf of fast-food restaurants, four participants represented organizations that cater to consumers in transit (e.g. a motorway restaurant), two participants represented cinema catering corporations, two participants represented the Dutch trade organization for the hotel and catering industry, and one participant was employed by the trade organization for supermarkets. We choose to include relatively many worksite cafeteria organization representatives in our sample, since research has identified worksite cafeterias as suitable settings for nutritional interventions, as they cater to a broad cross-section of the population on a regular basis [24, 25]. The majority of the participants were either food or marketing managers. In total, 26 companies were asked to participate in the study. Mostly due to lack of time, four companies were unable to meet our request.

All interviews were conducted in the Netherlands. In 2007, the Dutch population (16.4 million inhabitants) expended €54,442,000.000, - on food and drinks. This amount of money was spend in supermarket and retail settings (65.3%), restaurants and café’s (24.9%), transport catering (4%), worksite cafeterias (3.3%) and other point-of-purchase settings (2.5%) [26].

Interview topics
The portion size interventions discussed during the interviews were based on suggestions mentioned in the literature, and on a consumer study on portion size interventions [21]. Ledikwe et al. [27] identifies a number of promising interventions aimed at portion size: offering consumers a larger variety of portion sizes (i.e. giving consumers the option to choose smaller portions than the current standard sizes), reducing portion sizes (to counter the trend towards upsizing portions) and labeling portion sizes (to educate consumers in selecting portions that match their energy requirements). Portion size labeling designates an
appropriate quantity of a certain product to consume at a single occasion. Also, portion size labeling could indicate both the number of calories per portion and the corresponding percentage of people’s overall guideline for the daily amount of calories. In addition, portion size interventions could entail pricing strategies. Nielsen and Popkin have stated that portion sizes should be controlled using pricing and marketing strategies to stop encouraging consumers to purchase large portions that are financially more attractive [10]. This can be done by establishing proportional pricing for small and large portions (and consequently eliminating beneficial prices for large quantities), or by offering consumers the possibility to pay per weight without discounts for larger quantities. For example, some buffet restaurants allow customers to determine their own portions and pay by weight.

The interviews followed a semi-structured format and took approximately 1 h. The topics discussed were respondents’ opinions on corporate responsibility for healthy consumption patterns, their companies’ portion size policy, and how the respondents perceived the attributes of each intervention. Table 4.2 provides a more detailed overview of the interview topics.

**Data analysis**

Interviews were held until data saturation was reached. Data saturation was defined by a quotation count displaying a list of codes per interview. Subsequently, a percentage was calculated from the total number of codes that were generated from all interviews (i.e. 157). The cumulative percentages showed that after the 13th interview almost ninety percent of the codes were generated, and after the 17th interview about ninety five percent. During the last two interviews no significant new information was revealed. It should be noted that data saturation was not reached for each separate type of point-of-purchase setting. The method that was used to define data saturation has been described by Guest and colleagues [28]. Each interview was recorded and transcribed verbatim. The data were coded and analyzed with Atlas.ti 5.2, using the framework approach that has been developed specifically for policy-relevant qualitative research. Although the framework approach reflects the original interviews and is inductive in this sense, it starts deductively from a pre-set theoretical background and objectives [29].
Table 4.2 Main interview topics

<table>
<thead>
<tr>
<th>Topic</th>
<th>Questions</th>
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<tbody>
<tr>
<td>Corporate responsibility for healthy consumption patterns</td>
<td>What are the advantages/disadvantages of this intervention and how important are they? (Relative advantage)</td>
</tr>
<tr>
<td>Portion size policy</td>
<td>How risky would it be for your company to implement this intervention? What risks are associated with this intervention? (Risks)</td>
</tr>
<tr>
<td>Attitudes towards interventions aimed at portion size</td>
<td>Would this intervention be complex to implement and how important is this? (Complexity)</td>
</tr>
<tr>
<td>Participants’ suggestions for interventions aimed at portion size</td>
<td></td>
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<tr>
<td>Current situation with respect to interventions aimed at portion size</td>
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<tr>
<td>Attributes of innovation (for each intervention, i.e. a larger variety of portion sizes, reduction in portion sizes, pricing strategies, labeling of portion sizes)</td>
<td></td>
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<tr>
<td>Suitable settings and products</td>
<td></td>
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<tr>
<td>Implementation</td>
<td>What are the organizational aspects of implementing interventions aimed at portion size?</td>
</tr>
<tr>
<td></td>
<td>How should interventions aimed at portion size be communicated?</td>
</tr>
</tbody>
</table>

RESULTS

Corporate responsibility for healthy consumption patterns

Many participants acknowledged that point-of-purchase settings have a responsibility in promoting healthy nutrition, which was also described in terms of responsible entrepreneurship. Participants saw their companies’ role as proactive and facilitating (mainly by providing healthy food options and information) in order to make the healthy choice the easy choice.
**Portion size policy**

Most participants stated that their companies did not have a clear policy with respect to portion sizes. In cases where they did have a portion size policy for hot meals, it was often based on guidelines formulated by the Netherlands Nutrition Centre1.

**Attitude towards interventions aimed at portion size**

Some representatives expressed the view that the implementation of interventions aimed at portion size could be attractive, as it might help the company distinguish itself and create a positive health image. Other participants had more negative attitudes towards interventions aimed at portion size. The main objection voiced by some participants was that they doubted the effectiveness of such measures. These participants believed in a healthier food supply and composition, but not in smaller portion sizes. For instance, one participant commented (pointing at a cookie):

“What if you made this cookie three times bigger, but thanks to product development you could ensure that it contained five times less calories, less sugar, less carbohydrates in general? Then you would still be on the right track, even though the cookie’s bigger. In other words, you should give companies the opportunity to encourage those developments that are most favorable for them. Presenting size as the ideal means of tackling overweight would be too simplistic.”

Some participants also considered the quantity of food consumption to be a matter of individual responsibility. These participants argued that obesity could only be combated by means of consumer awareness and that this could only be achieved through education.

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1 A national government sponsored institution that provides information and education about healthy nutrition.
Participants’ suggestions for interventions aimed at portion size

In addition to the interventions we proposed to the participants, some offered their own suggestions. Participants suggested offering consumers smaller trays, doggy bags, divisible portions (e.g. two-pack king-size chocolate bars), so they could share the food or spread consumption over several occasions. One participant stated:

“In an agreement that has been made on confectionery, you have these divisible packages of Brand X for instance [participant mentions existing brand]. Although, the size of Product X has not changed, it can be divided up. So at least you can decide for yourself not to finish it straight away, but to consume it in two stages or over two days, or to share it with others.”

Current situation with respect to interventions aimed at portion size

Nearly all of the point-of-purchase settings represented offered a variety of portion sizes. In contrast, portion size reduction was hardly put into practice at any of them. On the contrary, some companies had recently introduced portion enlargements such as an XXL schnitzel. By way of exception, one participant representing a cinema chain indicated that his company had introduced a smaller sized (0.3 liter) soft drink and was considering discontinuing their largest size (1 liter). The producer that furnished their soft drinks had initiated this portion size reduction for reasons of image and responsible entrepreneurship.

With respect to proportional pricing of portion sizes, participants almost unanimously indicated that small portions were sold at relatively higher prices than large portions. In addition, one participant said the margins on small portions were higher than margins on large portions, but that in absolute terms large portions resulted in higher profits. We asked participants whether their companies had implemented other pricing strategies related to healthy nutrition. Three participants representing worksite cafeteria organizations said they offered clients the possibility to adopt a concept in which the margins on unhealthy food (e.g. fried snacks) were kept high in order to finance the low margins on healthy food (e.g. fruit). These worksite cafeteria organizations appeared to be open to pricing interventions related to portion size.
Self-portioning and paying per weight was only common at salad bars in some large worksite cafeterias.

Various types of food labeling appeared to be relatively common among the settings represented by our participants. However, portion size labeling was virtually non-existent.

The following sections outline the participants’ opinions on specific interventions. An overview of the main results can be found in Table 4.3.

**Relative advantage**

Participants mentioned a number of advantages and disadvantages of portion size interventions. First, many participants considered offering a larger variety of portion sizes to be a good service that would enhance customer satisfaction.

Second, participants mentioned that portion size interventions risked patronizing the customer. This view was especially prevalent with regard to portion size reduction, pricing strategies and, to a lesser extent, portion size labeling (although the latter was seen to depend on the tone). Some participants stated that it was a matter of corporate responsibility to provide choice and not to steer that choice by means of portion size reduction or pricing strategies. However, it should be noted that some respondents indicated that, even when offering a variety of portion sizes, their companies did steer their customers’ portion size choices towards large portions. This was done by the way portion sizes were named (i.e. adult consumers were unlikely to order a ‘kid’s meal’), priced (i.e. large portions were relatively inexpensive), labeled and presented (i.e. by exploiting the notion that people tend to choose medium-sized portions and that you can normalize large sizes by adding an even larger size). One participant illustrated this phenomenon as following:

“It’s the consumer’s responsibility. I offer small, medium and large, but of course I’m appealing to his aspiration not to be an exception, so he opts for medium. I mean... there have been studies on this. Why wouldn’t I make use of it?”
### Table 4.3 Overview of main results

<table>
<thead>
<tr>
<th>Current situation</th>
<th>Relative advantage(^a)</th>
<th>Risk</th>
<th>Complexity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Larger variety of portion sizes</td>
<td>Widely prevalent + Good service + Consumer demand - Shelf space</td>
<td>Stock management</td>
<td><strong>Stock management</strong></td>
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<td></td>
<td></td>
<td>Logistics</td>
<td><strong>Logistics</strong></td>
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<td></td>
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<td>Handling</td>
<td><strong>Handling</strong></td>
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<tr>
<td></td>
<td></td>
<td>Infrastructure</td>
<td><strong>Infrastructure</strong></td>
</tr>
<tr>
<td>Reduction in portion sizes</td>
<td>Virtually non-existent - Bad service - No perceived consumer demand - Patronizing - Lack of hospitality</td>
<td>Commercial Marketing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Commercial Marketing</strong></td>
<td></td>
</tr>
<tr>
<td>Linear pricing of portion sizes</td>
<td>Non-existent</td>
<td>Commercial Marketing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Commercial Marketing</strong></td>
<td></td>
</tr>
<tr>
<td>Self-portioning</td>
<td>Prevalent in certain large worksite cafeterias + Caters to individual needs + Inventive</td>
<td>Stock management</td>
<td><strong>Stock management</strong></td>
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<td></td>
<td></td>
<td>Logistics</td>
<td><strong>Logistics</strong></td>
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<td>Handling</td>
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<tr>
<td></td>
<td></td>
<td>Infrastructure</td>
<td><strong>Infrastructure</strong></td>
</tr>
<tr>
<td>Portion size labeling</td>
<td>Non-existent + Value of information provision - Patronizing (depending on the tone) - Difficult to define adequate portion sizes</td>
<td>Packaging material</td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) “+” = advantage, “-” = disadvantage
Third, some participants associated portion size reduction with a lack of hospitality, arguing that a portion should be sufficient for an average consumer, and that it is better to have too much than too little. One participant representing a fast-food chain added that consumers expected large quantities and that it was the company’s duty to fulfill this expectation. Furthermore, by going to a fast-food restaurant, consumers have already chosen to treat themselves rather than take a healthy option. Another participant representing a cinema added that going to the movies is seen as an outing, and is therefore an occasion when people like to indulge. His company wanted to meet this demand by serving large portions. He went on to add that, at cinemas, large portions are typically shared.

Fourth, consumer demands as perceived by the representatives were discussed during the interviews. Participants believed that offering a larger variety of portion sizes and offering customers the opportunity to determine their own portions would help to cater for individual consumer needs. In contrast, most participants did not believe that this was the case with portion size reduction. They said they were not opposed to portion size reduction but only if there were clear indications that consumers wanted smaller portions. In their experience, neither consumer suggestions nor sale figures pointed in this direction.

A fifth aspect that was mentioned was product innovation. Some participants considered self-portioning to be an innovative idea.

Sixth, shelf space was mentioned as a disadvantage in terms of offering a larger variety of portion sizes. Participants complained that space was already limited, and that their first priority was to offer consumers a variety of different products rather than a variety of sizes.

Last, some participants pointed out that it was not feasible to define adequate portion sizes, as this depends on each consumer’s individual situation, activity level, and body mass. Portion size labeling would therefore not make any sense. These participants advocated calorie information instead of portion size labeling.

Risks
An important issue discussed in relation to the risks of pricing strategies and portion size reduction was the fact that the cost of the food itself accounts for only a small amount of
the total price, which also has to cover the cost of personnel, logistics, packaging and so on. Since consumers want value-for-money, they will only accept relatively high prices if the portions are sufficiently large. As one fast-food restaurant representative put it:

“Well, simply selling a smaller size is not an option in my opinion. Purely from a commercial point of view, that’s unfeasible for us, because production costs remain the same. So, whether we make half a snack or a whole one doesn’t matter; it’s still the same amount of work. But if you are providing smaller portions, you have to reduce your price, which means we would end up reducing our margin. That is a big problem.”

According to the participants, there is a risk that consumers will go to the competition if they do not feel they are getting value-for-money. This caused some participants to argue that portion size interventions could only be implemented throughout the sector. However, existing competition laws prevent companies from making such agreements (in order to prevent cartels), leading some participants to argue that the government would have to draw up new legislation to facilitate such an intervention.

Second, participants stated that they could only finance proportional pricing by making large portions more expensive. However, if large portions were to become more expensive, consumers would be encouraged to buy small portions, thereby eliminating the margins needed to finance the lower priced small portions.

Third, some participants mentioned high average spending per customer and up selling (a sales technique whereby the customer is stimulated to purchase more than he initially planned) as important targets that would be jeopardized by interventions aimed at portion size. In particular, these risks would apply to portion size reduction and pricing strategies.

Fourth, pricing and portion sizes were seen as important marketing tools. Some participants representing fast-food restaurants pointed out that big sizes could be considered to be one of their unique selling points. In general, participants expected a great deal of resistance from consumers if they noticed that portions had been downsized,
although some participants thought that this would only be an initial reaction and that consumers would soon become accustomed to new portion sizes.

**Complexity**

Many participants identified complexity as a barrier to implementing a larger variety of portion sizes and giving consumers the opportunity to determine their own portions. Stock management and conservation were mentioned in this respect.

Giving consumers the option to decide their own portions would lead to extra handling, as food would have to be weighed before being paid for. All in all, participants felt that more variety in portion size and self-portioning would be more complex and more time-consuming, something that could cause problems in settings such as worksite cafeterias, cinemas and fast-food restaurants where speed is important.

Other practical complexities concerned labeling. First, a great deal of packaging material would be needed for different products requiring different portion size labels. Second, participants said they would be reluctant to give too much information on their packages and in their stores, for reasons of clarity but also because it would undermine the function of these elements as marketing tools. Third, they made the point that packaging is often made in large quantities well in advance. Since information is likely to change, this would increase the likelihood of packaging becoming outdated more quickly.

**Suitable settings and products**

In general, participants representing worksite cafeterias expressed the most favorable attitudes towards interventions aimed at portion size (except for portion size labeling, since the food at worksite cafeterias tends to be individually packed). Large catering facilities in particular seemed to make suitable settings for interventions aimed at portion size. Participants representing worksite cafeteria organizations suggested that government and white-collar locations would provide the most appropriate settings, as these clients were more likely to endorse portion size interventions. In addition to worksite cafeterias, self-service restaurants, fast-food restaurants and cinemas were also regarded as suitable
settings for certain portion size interventions such as offering a larger variety of portion sizes and portion size labeling.

**Implementation**

*Organizational implementation*

According to the participants, an organization-wide implementation of each innovation or intervention would have to be preceded by a pilot study. The factors which they argued had to be looked into during a pilot study were sales figures, consumer satisfaction and practical feasibility.

The study revealed that the specific organizational structure of worksite catering has implications for the implementation process. Worksite cafeteria organizations are hired by an organization and given the assignment to cater for its employees. Worksite cafeterias are therefore dependent on their client’s willingness to adopt portion size interventions. Convincing clients would therefore be an important and time-consuming aspect of any implementation process for worksite cafeteria organizations. However, employers seem to consider health as an increasingly important topic. Therefore, quite some worksite cafeterias representatives considered it feasible to convince their clients of the importance of portion size interventions and pricing strategies. Hence, worksite cafeteria representatives seemed relatively unconcerned about the commercial risks that are potentially related to portion size interventions.

The participants also pointed out that interventions aimed at portion size would have implications for their personnel. Considerable effort would therefore have to be invested in educating, training and supporting personnel. A very similar situation would apply to franchise organizations which are at least partly dependent on the willingness of franchise holders to implement an intervention.

Lastly, participants representing international organizations mentioned that it was very difficult to make decisions about the product range on a national basis, and that taking decisions for implementation across the organization was a slow and laborious process.
Communication about interventions

The majority of the participants identified communication about the interventions aimed at portion size as a crucial aspect of any implementation, and pointed out that this was an almost impossible task. As one catering organization representative commented:

“As the selling party you can only communicate it [i.e. portion size interventions] effectively with the aim of getting consumers to accept a smaller quantity, if the quality is good. If the price/quality ratio is satisfactory and if you can convey that message, then yes, it will work. But if I say: “Hey here is your smaller sized snack and it’s healthier for you”, without any further explanation, we won’t make it.”

Many said that portion size reduction would be difficult to communicate to customers, as it could easily be interpreted as a marketing trick to improve the company’s profit margins. They pointed out that consumers generally expect value-for-money and would see portion reductions as suspect.

Furthermore, consumers associate greater value-for-money with large quantities rather than small quantities. For this reason, pricing strategies with respect to portion size would have to be carefully communicated.

Some participants suggested that a conscious effort should be made to communicate the health reasons behind interventions targeted at portion size. Others did not believe that this would be effective, as consumers could perceive it as patronizing.

DISCUSSION

To summarize the results, it appeared that obesity awareness was widely prevalent among the participants. The respondents also indicated that, from the perspective of responsible entrepreneurship, their companies were willing to play an active role in combating this societal problem. Of course, this willingness was subject to the condition that any such intervention would not harm commercial interests. Furthermore, in spite of the companies’ involvement with obesity, controlling portion sizes did not represent part of their current
health policies at all or hardly at all; this corresponds with findings from Lang and colleagues [30]. The companies that participated in our study focused on the type of food supplied rather than on smaller portion sizes. Nonetheless, research has indicated that large portion sizes do seem to be a significant factor in instigating food consumption and therefore indirectly contributing to weight gain [13-19].

In addition to these aspects, participants thought that obesity could only be combated by means of consumer awareness achieved through education. This intuitively appealing assumption has been proven untrue and a large body of evidence suggests that educational interventions are not sufficiently powerful in changing obesity-related behavior, while environmental interventions are far more influential in altering food consumption behavior [3, 31]. This information suggests that it is worthwhile raising awareness among decision makers (e.g. marketing, food and concessions managers) about the role of portion sizes in food consumption and about the importance of environmental interventions.

With respect to the five interventions discussed during the interviews, the following conclusions can be drawn. First, offering a larger variety of portion sizes was perceived as having the most relative advantages, while reducing portion sizes was perceived as the most disadvantageous option. Second, participants associated considerable risks with portion size reduction and proportional pricing. It should be noted that by drawing up new legislation, governments can facilitate the implementation of portion size interventions throughout the sector and thereby reducing risks for the companies. Third, a larger variety of portion sizes, offering customers the opportunity to determine their own portions and, to a lesser extent, portion size labeling were seen by the majority as most complex to implement. In general, participants seemed to be most open to a larger variety of portion sizes and portion size labeling, followed by pricing strategies related to portion size, and portion size reduction.

The degree to which participants were open to interventions aimed at portion size depended on the point-of-purchase setting they represented. In general, participants who spoke on behalf of worksite cafeteria organizations expressed the most favorable attitudes towards portion size interventions. As mentioned before, this is a promising result, since research has identified worksite cafeterias as suitable settings for nutritional interventions [24, 25]. An important practical barrier for worksite cafeteria organizations is their
dependence on their clients’ approval when making changes to their food supply and prices. Another drawback is that participants representing worksite cafeteria organizations indicated a preference for implementing interventions aimed at portion size in white-collar settings where people are generally more open to health-related interventions. As understandable as this might be, this viewpoint can be considered a threat to environmental interventions targeting the obesogenic environment. Preferably, environmental interventions should be implemented across the board or in settings where obesity is mostly prevalent. As the prevalence of obesity is related to peoples’ socio-economic status [32], intervention in blue-collar settings would be a more sensible choice. In line with Rogers’ theoretical framework for the diffusion of innovations [23], this obstacle might be overcome by considering white-collar settings as innovators, and starting the diffusion process there. Once its success is established, interventions aimed at portion size could then be disseminated among the early and late majority.

With respect to the implementation process, the findings of this research suggest that a pilot study focusing on sales figures, consumer satisfaction, and practical feasibility is strongly recommended. In addition, considerable effort should be invested in facilitating and training personnel in adapting to the new working processes, and in communicating the interventions to customers. At this point, it is unclear whether the emphasis in communicating the interventions should be placed on health benefits or value-for-money. The latter might be warranted by adding another type of value (e.g. quality or presentation) instead of offering large quantities. In addition, as mentioned before, it seems that many point-of-purchase settings want to respond to consumers expectations regarding large quantities of food. Communication strategies should attempt to unwind the association that is currently being made between hospitality and large portion sizes.

Overall, the results of this study provide useful insights into the development of interventions aimed at portion size, although it should be noted that qualitative data are not suitable for generalization. However, the interviews continued until data saturation (as defined in the methods section) was reached. A limitation of this study was that the different point-of-purchase settings were not equally represented in our sample. It is therefore hard to compare the opinions that the different point-of-purchase setting
representatives expressed during the interviews. Nevertheless, attention was given to discrepancies between the different types of point-of-purchase settings and on many topics the results showed a remarkable consensus among the participants of the different point-of-purchase settings.

**CONCLUSIONS**

Our study shows that most interventions aimed at portion size can be considered innovative for the majority of the companies represented. Nonetheless, participants expressed favorable attitudes towards offering a larger variety of portion sizes and portion size labeling. Further, worksite cafeteria organizations seemed open to pricing strategies with respect to portion sizes. As both portion size labeling and pricing strategies related to portion size have yet to be implemented, both interventions offer opportunities for implementation and the findings of this study suggest it is advisable to first assess their effectiveness in a pilot study. Communication strategies on portion size interventions with both decision-makers in point-of-purchase settings and the general public are an important aspect of the implementation and require careful development.
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