

Confectionery and Child Consumers: Situation and Solution Proposals

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Abstract

The group of child consumers differs significantly from other consumer groups due to the effects of individuals other than themselves on their preferences as well as motivation factors of consumers' food choices. In recent years, the effect of the relationship between nutrition and health on food preferences has increased. The effects of this relationship on protectionist consumer approaches towards children are more visible. It can be stated that communication channels, especially social media, increase the level of this effect. Foods, which are frequently preferred by child consumers due to their taste and pleasure but contain high calorie value and high sugar levels associated with obesity; are among the foods that are frequently discussed. This situation increases the concern of parents about these foods. In this study, consumption characteristics of sugar and confectionery products and potential alternatives to these products are discussed with the aim of due diligence and seeking solutions. It is important to carry out awareness-raising activities on sugar and sugar products not only for children but also for all socio-economic and age groups, and to develop policies and strategies for this purpose. Computer game-based consumer awareness studies can be used for sugar and confectionery products and for a lively lifestyle in order to provide fast and direct awareness to children. However, first, it is recommended to elaborate due diligence in order to determine the quality and quantity of information and awareness, to identify possible solution proposals with the participation of all stakeholders and to conduct pilot practices based on recommendations. It may be more beneficial to carry out these activities for a specific product and consumer groups rather than the general nutrition and consumer group.

Keywords

Children, Nutrition, Sugar, Consumer, Food Preference, Consumer Group

1. Introduction

Children consumer group is a group that differs significantly from other consumer groups due to the motivation factors in food preferences as well as the effects of individuals other than themselves on these preferences. Although parents may generally make consumption preferences on behalf of this group, it is possible for children to interact indirectly or directly through different communication channels. After these interactions, the purchase is reflected as the demand for parents and the severity of the interaction affects the quality and severity of this demand. This situation may lead to different reflections of changes in general consumer trends in child consumers.

In recent years, the effect of the relationship between nutrition and health on food preferences has increased. It can be stated that communication channels, especially social media, increase the level of this effect. Although there is some information pollution related to some product groups or consumption methods, both the producers and consumers can use these communication channels widely in order to establish marketing activities such as product promotion, component research, questioning expert opinion, sharing knowledge and experience. Because of the rapid dissemination and sharing of information and/or opinion, negative attitudes and perceptions have the effect of large groups. Child consumers is a group of consumers that need protection. In addition, this group should be discriminated positively compared to other groups. Adult consumers must try to isolate child consumers from the products they consciously consume. In addition, adults should prevent the consumption of products that they believe to have a negative relationship with health by children. Among these product groups, high calorie value, high sugar level foodstuffs, especially confectionery, are associated with obesity. The paradox is that, because of the sensory characteristics and “pleasure” of the same food group, they are among the main foodstuffs demanded by the child consumer group. In this study, consumption characteristics of sugar and confectionery products and potential alternatives to these products are discussed with the aim of due diligence and seeking solutions.

2. Sugar and Confectionery

Sugar refers to mainly mono- and di-saccharides as sucrose and sucrose derivatives (invert sugar, raw sugar, brown sugar, icing sugar, crystal sucrose), starch-based sugars (glucose and fructose syrups). Sucrose is the most widely used type of sugar. It contains one molecule of glucose and fructose disaccharide formed by the separation of a molecule of water [1]. Apart from sucrose, starch-based sugars, which are obtained using corn, potatoes and wheat starches with different levels of glucose and fructose as well as other carbohydrates and starch-derived carbohydrates, are included in foods, depending on the process to which they are subjected to.

Confectionery, on the other hand, is composed of various sugars and water.

Confectionery products have widespread consumption in all regions and age groups, especially by children. Although not fully accepted in the food categories by some researchers [2], these products have a globally growing market trend. These products are of great interest to children consumers by their flavor and taste properties. In particular, soft candies, having a gelled structure is among the fastest-growing product groups among the confectionery products [3]. However, in parallel with the changes in consumer trends and expectations, there are important expectations and demands for reducing the sugar, gelatin, artificial aroma and colorants or replacing them with natural ingredients and alternative bulking agents [4]. Because excessive consumption is associated with an increased incidence of obesity, dental caries and hyperglycemia result [2]. This causes adults to make efforts to prevent and reduce the consumption of confectionery products by child consumers.

In recent years, the re-formulation of sugar content in foodstuffs with high caloric value or acute glycemc response has been among the priorities of international health authorities [5]. Confectionery consumers have demand and expectation for the production of conventional products with healthier and lower sugars, and in this product group, products that include innovations in terms of appearance, texture and aroma need to be introduced to the market [2]. Complete or partial substitution of sugar may be performed. Wholly substituting generally requires the use of alternative sweeteners and bulking agents (or fillers) [6], the use of non-sweetening bulking agents alone, depending on the rate of substitution in some products, may also be sufficient. Children are the main potential consumers for these products. However, adults who are the decision-makers of this consumer group are in an effort to eliminate or minimize their risk level and perception. This is a factor that must be considered in the selection of bulking agents and sugar substitutes. Because the expectations of both an indirect consumer group that needs to be eliminated and reduced, as well as a direct consumer group who want to consume these products for “pleasure” needs to be met.

3. Sugar Alternatives for Confectionery

Confectionery is widely consumed by all socio-economic groups of all ages, especially children. They are a wide range food group including soft, hard, jelly, gummy and aerated confectionery, chocolate and derivatives and chewing gum. The widespread consumption of these foodstuffs increases the potential for the use of various bioactive compounds as a means of distribution [7]. However, confectionery products, especially candies, have some disadvantages according to consumer expectations as following:

- High calorie value
- High glycemc index

These disadvantages may cause negative effects on dental health, potential interactions with various systemic health problems (e.g. insulin resistance, meta-

bolic syndrome, diabetes) [8] and obesity.

The main causes of these disadvantages are the mono- and disaccharides included in its composition, especially sucrose and glucose and fructose syrups obtained from starches of different plant origin. Thus, the confectionery to be developed or developed should not only contain sufficient amounts and stability of various bioactive compounds, but also these products should be in “sugar-free” and/or “low calorie” forms.

Sugar-free product development studies generally use sugar alcohols selected according to their technological properties, texture, sweetness and their effects on mass [9]. The main handicaps in the selection of bulking agent or sweetener for sugar substitutes in confectionery products are: 1) the level of solubility; 2) degree of sweetness; 3) interaction with the gelling agent, and the effect on structure formation; 4) the effect on aroma release. This is because the use and level of sucrose have an impact on them and the results have an impact on the process and final product quality. In order to determine the possible effects, it can be stated that textural, rheological and sensory evaluations come to the fore. Non-digestible carbohydrates, sugar alcohols, and some oligosaccharides are the main bulking agents used in the food industry [6]. In recent years, however, the use of dietary fibers to improve the nutritional quality of confectionery has been seen as an appropriate strategy [10].

4. Changes in Consumer Attitudes and Behaviors

Changes in consumption habits, the development of awareness about the importance of the relationship between health-nutrition, consumer perception, attitudes and choices significantly affect. For all food categories, there is a significant increase in the expectation level for innovative products with such features as following:

- Calorie level restricted,
- Bioactive compounds (e.g. fibers, probiotics, prebiotics, vitamins, minerals) added or enriched in the present ratio of these components,
- Mono- and di-saccharide contents modified,
- Reduced saturated fat,
- Reduced salt content.

Obesity and related diseases are an increasing problem for Turkey as in all countries. In Turkey, the obesity rate is 32%, the rate of overweight individuals is 34.8% and the prevalence of diabetes is 12.1% among adults over 15 years of age. The obesity rate in childhood is 9.9% in the 7 - 8 age group, while the rate of overweight children is 14.6% in the same age group, the obesity rate in secondary school children increased to 12.4% and the rate of overweight children increased to 21% [11]. Possible reasons for the increase with age may include changing in food consuming habits, especially the increase in the consuming level of high-calorie foods which contain sugars and/or saturated-fat. This situation causes an increase in the anxiety of parents and the severity of this anxiety.

As a result, a more protective approach is developing for foodstuffs that are among the sources of the problem; especially sugar and confectionery are affected by this approach.

5. Nutrition Trends and Their Reflection on Children

The increase in awareness of the relationship between nutrition and health is reflected in consumer preferences all over the world [12]. The increase in the incidence of nutritionally associated diseases, particularly cardiovascular diseases and obesity, leads consumers to pay more attention to functional foods supplemented with various bioactive components. Consumers evaluate functional foods within the food group including the conventional form [13]. Especially in ready-to-eat foods with sensory characteristics of acceptable quality and level, those produced as healthier are in demand [14].

In the last 20 years, the motivation elements of consumers' food preferences have changed significantly. The *International Food Information Council Foundation* (IFIC) has stated that healthy after taste and price (e.g. functional, natural, organic, etc.) is one of the main motivating factors on food choice. In the same study, it was stated that the addition or enrichment of beneficial ingredients to the composition of the food positively affected the purchasing decision of more than 80% of American consumers and 88% thought that such foods have a potential positive effect on the general health [12]. In addition, consumers prefer natural and organic food or food additives, which is an important consideration to be considered by the industry. Consumer preferences and choices should be taken into consideration in the researches carried out in the field of food science as well as guiding the industrial production and product development activities.

The EFSA Scientific Opinion on Nutritional Reference Values for Carbohydrates and Dietary Fibers 2010 published in 2010 remains valid. The report includes sucrose, fructose, glucose and starch-based sugars under the heading "Glycemic carbohydrates". Furthermore, the report did not suggest any difference between sucrose and starch-based sugars. The same applies to the guidelines published by the World Health Organization in 2015 "Sugars intake for adults and children". According to the definition of the World Health Organization, "added sugars" include all monosaccharides and disaccharides added to foods by the producer, cook or consumer. In addition, naturally occurring sugars in honey, syrups and fruit juices were considered as added sugar. These guidelines include recommendations on consumption levels of added sugars, monosaccharides and di-saccharides are referred to together, and no distinction is made between sucrose and starch-based sugars in the entire guideline [15]. In this case, a preference or rejection justification based on the calorie level and the amount of sugar added may be more accurate than a sucrose-based, starch-based and sugar-based approach in food preferences for child consumers, both as a direct sugar or as a sugars component.

6. Conclusions

As a general consumer policy, it is important to carry out awareness-raising activities on sugar and confectionery products in all socio-economic groups, not only child consumers but also for all age groups, and to develop policies and strategies for this purpose. Because perceptions, attitudes and behaviors of more than one consumer groups are effective for child consumer groups, communication activities should be carried out for all of them. In particular, it is beneficial to reduce the calorie intake and to avoid the diet, which may cause excessive calorie intake. For this purpose, it is possible to use visual and written materials in the packaging of common foods to encourage information and sporting and active life style.

Fructose is sweeter than glucose; therefore, it is easier for children to consume and develop the palate in the direction of sugary products. This factor should also be taken into account for low-calorie candies and sugar alternatives to be developed. In particular, the use of fruit and fruit juices for this purpose, as well as the development of other flavor features of these foods as well as other health-promoting nutrients may be possible to contain, it may be possible to encourage the consumer.

Social media and game-based learning are becoming more prominent among digital communication channels. Game-based consumer awareness activities can be conducted for sugar and confectionery products and active lifestyle. Game-based applications to be developed for this target have the potential to provide fast and direct awareness to children.

In order to reduce sugar consumption in society, it is a necessity to develop balanced nutrition policies in order to inform the consumer and to establish a healthy nutrition culture from infancy and childhood to the whole society. For this purpose, the cooperation of different institutions and organizations is important. First of all, due diligence needs to be elaborated, possible solution proposals should be determined with the participation of all stakeholders, and strategies should be revised and improved as a result of pilot implementations. It is important that sugar and sugar products producers take part as an important stakeholder in all these activities.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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