

The following with the associated attachment " A Statement from the Commonwealth Dental Association" (CDA) constitutes the CDA response to the WHO consultation on the above subject.

CDA is grateful for the opportunity of responding on this topic and pleased that WHO is considering the impact of dental disease in this way. CDA has considerable reservations on the paper concerning dental caries which was included and wishes to make the following observations:

- there is too much emphasis on the amount of sugars and not enough on frequency of exposure which is now acknowledged as being of prime importance
- there is very little focus on the important role of fluoride
- the role of fermentable carbohydrates has been given too little attention
- the role of saliva and its protective function deserves much more discussion
- the use of the term "non milk extrinsic sugars" is peculiar only to the UK and does not have global acceptance.
- similarly the reference to COMA is specific to UK and COMA has now been superseded; certainly its views have not been accepted by the global scientific community
- the use of Dietary Reference Values for amounts of sugars is a very theoretical, impracticable, unproven and cumbersome tool for delivering good oral health messages to the public.

Instead CDA would wish to see an emphasis on co-coordinating general and oral health nutrition messages in a way that is practical and attractive to populations and individuals, paying attention to the role of fluoride, the importance of oral hygiene and the reduction of frequent exposure to sugars consistent with good nutritional practice.

The attached CDA Statement emphasises these issues and is an integral part of the CDA response.

Dr Brian Mouatt  
President CDA

## **A Statement from the Commonwealth Dental Association**

### ***A Commonwealth Dental Association Position Paper on Diet, Nutrition and the Prevention of Dental Caries and Erosion.***

**Inappropriate and frequent consumption of sugar containing foods and drinks is one of the most important causes of tooth decay (dental caries).**

**Food and drinks which are acidic may also cause erosion of tooth tissue.**

**Developing countries as much as any others need to have preventive programmes in place with three main priorities:**

- **Reducing the frequency of intake of cariogenic and acidic food and drink**
- **Optimising the use of fluoride both as a public health measure and for individuals**
- **Establishing preventive/oral hygiene programmes within a primary care setting, involving not only the dental team but also medical, educational and planning personnel.**

#### **Rationale**

Dental caries is a widespread, worldwide disease having serious individual, population and socio-economic consequences. Its major causative agent are acidogenic microorganisms and a carbohydrate-rich diet. The association of sugar and dental caries has been known for centuries and the expression that “sugar harms the teeth” is still valid. Epidemiological evidence from around the world has implicated “sugars” as the most important dietary factor in the aetiology of caries. Human clinical studies have demonstrated that when the consumption (especially the frequency of consumption) of sugar is increased under controlled conditions, then caries increment follows, while conversely a reduction in consumption leads to a fall in caries.

However, the term “sugar” is not an exact expression in connection with dental caries. Sugar is usually associated with sucrose only but many different types of sugars play a role in the aetiology of dental caries. A better definition is “fermentable carbohydrates” covering all those sugars and more complex carbohydrates which can serve as a nutritional supply

for cariogenic micro-organisms. Fermentable carbohydrates comprise sucrose, glucose, fructose, lactose, galactose, maltose and cooked starch. These are all easily or relatively easily fermented by cariogenic micro-organisms in vivo and all serve as substrates for bacterial acid production. It is the action of these acids that cause the demineralisation and subsequent destruction of tooth tissue. Of these carbohydrates, sucrose is the most harmful one. It is the most suitable for bacterial metabolism, and so it is a good energy supply for bacteria. Its components, glucose and fructose, both serve as starter molecules for the formation of sticky extracellular polysaccharides – one of the virulence factors of *streptococcus mutans*, the organism most closely associated with dental caries. If these fermentable carbohydrates are present in a diet, then even a small amount of acidogenic microorganisms can initiate dental caries.

At a population level (but not necessarily at an individual level) there is still a clear positive association with the intake of fermentable carbohydrates and dental caries. When the intake or the frequency of intake increases, snacks containing fermentable carbohydrates become particularly harmful at a population level. Recently, the positive association between intake of fermentable carbohydrates and dental caries has been obscured by preventive methods, such as widespread use of fluorides. However, the association still exists and is of vital importance for the aetiopathogenesis of dental caries. Dental caries is found in differing forms; smooth surface, occlusal, interstitial, and root caries. Each type may have a differing natural history. This fact has not changed during the last few years although, often, it is not epidemiologically so clear as previously, due to a number of confounding factors such as fluoride, better oral hygiene, use of non-acidogenic sweeteners and better nutritional status.

No diet is without fermentable carbohydrates. Thus, from a dental point of view, carbohydrates should be consumed mainly during meals. Between meal snacks or drinks should be restricted to two or three times daily. Sticky food items with a slow oral clearance time are more harmful than rapidly cleared liquids. Some “sugars”, such as mannitol, maltitol, sorbitol and xylitol are hypoacidogenic and as such are poor substrates for acidogenic microorganisms. Sugar alcohols (polyols) and artificial sweeteners are considered to be non-cariogenic. In addition to these dietary considerations, dental caries can be reduced or prevented using sweeteners other than sucrose, through good oral hygiene, the use of fluoride toothpaste or by fluoride delivered in the water supply, in salt or in milk.

No conclusive evidence exists that even frequent intake of “sugars” can cause other oral diseases (e.g. periodontal or mucosal), not even if oral hygiene is poor. It has been claimed that a diet rich in sugar could affect the amount and composition of dental plaque in such a way that plaque-associated diseases, e.g. gingivitis and periodontitis, develop more easily but no strong evidence to support this hypothesis exists. However there is good evidence to suggest that frequent exposure to acidic food and drinks may cause erosion of the tooth tissues.

The use of dietary guidelines and targets for “sugars” has not proved useful on a population or individual basis and complex descriptors such as “non-milk extrinsic sugars (NMES) are of doubtful validity and confuse the basic oral health messages. This approach has been examined and dismissed by the joint WHO/FAO Report of 1997 and more recently by the Eurodiet Report of 2001. Dietary Reference Values in the context of the prevention of dental caries are at best theoretical. The very term NMES itself is impractical and confusing to the public and diverges from the world-wide scientific consensus, diverting attention away from the known effective measures that can be adopted on a population basis.

## **A Statement from the Commonwealth Dental Association**

### **Acknowledgement**

This statement is adapted from the work of the Council of European Chief Dental Officers’ response to the Eurodiet Consultation and CDA is grateful to CECD0 and herewith acknowledges this source.