Introduction

The prevalence of dental caries has decreased considerably in the younger generation over the past three decades. It is also some 10 years since the last symposium on the aspects of dental caries and prevention was published in *Caries Research*. It is known that the distribution of dental caries is markedly skewed, with the majority of people with low decay but a minority still with unacceptable levels. The cause(s) for this change is still not entirely clear. Various reasons for this decline have been suggested, such as an increase in fluoride use or alternatively a decrease in sugar consumption, but the interpretation of the causal factors seems dependent on the research interests and goals of investigators.

It is, indeed, questionable whether the caries decline can be attributed to changes in diet. Since 1985, studies on the relationship between diet and caries have been dropping in number decade by decade. 1985 was the year that the ADA stopped funding diet-related caries research, which may reflect a lack of interest but not a lack or an excess of knowledge. In fact, some scientific knowledge could be updated. Because of this, it was thought that consideration should be given to an up-to-date review of the latest research on the etiology of dental caries and this was, in particular, one of the reasons that the ILSI Europe sponsored a symposium in Graz on current thoughts on the relationship between diet and caries.

These days we know a great deal about malnutrition and general health, but the relationship between sugar consumption and caries has been changed by the widespread use of fluoride and improved oral hygiene. It is generally accepted that one can eat sugars frequently, as long as fluoride intake and oral hygiene are in balance.

Scientific evidence, however, remains missing on the solid evidence for a direct causal relationship of sugar and dental caries. Moreover, many studies have been performed with children, while there are few, if any, with adults. Yet, increasingly, with aging populations, caries in the elderly becomes a problem for which there is very little hard scientific evidence.

In the opening paper of the symposium, Professor Sanders explains the rationale for the process of formulating dietary guidelines and the current thinking on nutritional and lifestyle factors to prevent or manage diet-related chronic diseases. He also addresses some areas of scientific controversy as well as consensus in the formulation of numeric values for macronutrient intakes and discusses dietary recommendations which provide conflicting messages either from the dentist's or from the nutritionist's point of view. An overall rational approach to dietary counseling is advised, as dietary patterns, together with oral hygiene behavior and lifestyle factors, determine both oral and overall health and well-being.

Recently, novel methods for analyzing the metabolic activity in dental plaque and its eventual impact on the caries process under the dental plaque have been developed and this is essentially demonstrated in the paper by Dr. Zaura and Professor ten Cate. They used a combination of microsensor technology for plaque pH measurements with transversal microradiography. These combined techniques offer new challenges for research into the carious process and in determining future preventive strategies.

The opinion of experts in dentistry on the relationship between dental caries and diet continues to vary. The

paper by Dr. van Loveren and Professor Duggal provides a review of the current state of research findings and the current thinking of the experts on this important question. It was concluded that dietary advice for caries prevention should focus on good versus bad diets and not so much on good foods versus bad foods.

Another aspect of the skewed distribution of dental caries is that of the very young and the elderly, which is a challenge to dental researchers. In both instances, the subjects with the decay, preschool children and the elderly in care, are not independent people but rely on carers. Professor Curzon and Dr. Preston provide an overview of the management of the caries risks in the primary teeth as well as the increasing risks of root caries in the very elderly.

Tooth wear, including dental erosion, is a phenomenon that has gained increasing attention in recent years. In all probability it is not a new condition but one that was

masked in years past by the high rate of dental caries. Erosion in many ways is a diet-related oral disease but is brought about by chemical attack to the teeth. Professors Lussi and Zero provide an excellent update on the current concepts of the condition and risk assessment, and give pointers for future research on the management and prevention of erosion as well.

The papers presented in this symposium, as is not uncommon, ask many more questions than they answer. But in doing so, they point the way forward for dental researchers. These papers cover a spectrum of aspects of the diet-caries/erosion relationships, highlighting a number of areas of further investigation that are urgently needed for the care of the high-risk groups in the populations we deal with.

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