Changes in the Prevalence of Dental Caries: How Much Can Be Attributed to Changes in Diet?

The members of Workshop A focussed on the dietary factors that can affect the prevalence and increments of dental caries and could account for epidemiological changes in populations, either increasing or decreasing this disease. In addition this group considered the possible impact of other, nondietary factors on caries prevalence, especially the use of fluorides.

The decline of caries prevalence in children and young adults is easily explained by the widespread use of systemic fluorides and/or increased use of topical fluorides, especially in dentifrices.

This decline has been observed primarily in industrial countries where the use of fluorides in various forms has been promoted or recommended. Thus the use of fluorides is recommended for caries prevention.

The major reduction in caries prevalence has occurred on smooth surfaces so that now pits and fissures account for the bulk of caries in children.

In countries where caries prevalence has declined, supplies of sugars have either decreased, remained stable or slightly increased. The modest reductions of supplies of sugars and of sugars consumed in various forms provide little evidence for a decrease in cariogenic challenge.

For individuals at ‘high risk’ of caries, even in countries with declining caries prevalence, intake of sugars (fermentable carbohydrates) continues to be a major factor in the caries process. An association between amount and frequency can be assumed since in longitudinal studies the amount and frequency of intake of sugars correlates with caries increments.

Epidemiological data in both developing and developed countries that lack extensive use of fluorides and other preventive measures show a rise in caries prevalence due to increasing supply of refined and processed sugars.

No other dietary changes have emerged to account for the substantial changes in caries prevalence.

Substitution of sugars is recommended in appropriate products, since in Switzerland the availability of hypo- and nonacidogenic products appears to have contributed to the strong decline in caries.

Other factors that have been considered to affect the decline in caries prevalence on an epidemiological basis include the following:

- **Factor: Effect**
  - Oral hygiene: possible evidence; an oral hygiene effect cannot be separated from the fluoride effect
  - Microbial shifts: no evidence; can be ruled out as a cause of decrease of caries; may be a consequence of decreased caries prevalence
  - Diagnostic: no evidence; as caries has decreased lesion size criteria has changed
Herd immunity no evidence; decline too rapid to be accounted for this mechanism. Organization of positive evidence; in countries where there has been an emphasis on preventive intervention and care of children, this has contributed to caries reduction.

(10) Recommendations for further research on the role of dietary factors in caries prevalence: collection of food production and balance sheets and specifically amount and frequency of use of sugars and other fermentable carbohydrates; concurrent collection of appropriate dental caries prevalence and increment data; detailed information on dietary habits and food consumption by high caries risk groups according to age, and further epidemiological studies on the effect of nonfermentable sugar substitutes on caries prevalence and increment.